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Voluntary Paper Code Advocated In Wisconsin

Paper Mill and Labor Representatives Adopt Resolution Providing for Maximum Hours, Minimum Wages, Maximum Machine Operating Week of Six Days and Abolition of Child Labor—Adequate Protection of Pulp and Paper Industry Also Favored—Public Funds for Additional Paper Mills Opposed

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., November 4, 1935.—Paper mill and labor union representatives meeting at Appleton, Wis., on Tuesday of last week adopted a resolution introduced by J. M. Conway, president of the Hoberg Paper and Fibre Company, Green Bay, Wis., providing for: A voluntary code of fair competition embodying maximum hours of labor, minimum wages, a maximum machine operating week of six days, and the abolition of child labor. The resolution was seconded by William Rounds, vice-president of the Combined Locks Paper Company, Appleton, Wis.

Mills represented were the Hoberg and Combined Locks companies, and the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis. Others invited were the Marathon Paper Mills Company, Mosinee Paper Company, Wausau Paper Mills Company, Hoskin-Morainville Paper Company, and Thilmany Pulp and Paper Company. Most of these mills had employees present representing their local unions.

Matthew J. Burns, president of the International Brotherhood of Paper Makers, presided at the meeting. Others who took part in the discussion were John P. Burke, president of the International Brotherhood of Pulp, Sulphite and Paper Mill Workers, Congressman George J. Schneider, vice-president of the International Brotherhood of Paper Makers, Raymond Richards, vice-president of the Wisconsin State Federation of Labor, and Ernst Lambton, representative of the paper makers' unions of the middle west.

The conference also favored adequate protection of the pulp and paper industry either in the form of a tariff or a quota on imports of pulp and paper.

It was suggested by the conference that the same number of working hours per week be adopted as were stipulated in the former NRA code.

The conference was called by the international unions to bring employers and employees together for a discussion of the present business situation in the industry in the United States.

Delegates of locals of the international paper unions from Wisconsin and Michigan also held a convention of their own on Monday, October 28, at Kaukauna, Wis., at which these same international and state officers were the speakers. Besides adopting the policies enumerated above, the convention adopted a number of other resolutions.

One of these urged the board of governors of the pulp and paper industry and the American Pulp and Paper Association to take advantage of the legislation enacted by the seventy-fourth Congress continuing the National Recovery Act. The delegates indorsed George L. Berry as co-ordinator for industrial co-operation. They opposed use of public funds for erection of additional paper mills in the United States, because of overproduction thus created, with accompanying unemployment. The loan of $4,000,000 by the Reconstruction Finance Corporation for a kraft paper mill at Crosset, Ark., was cited as an example. The kraft industry is now operating at only 65 per cent of capacity.

Another resolution recommended that Cordell Hull, secretary of state write into the reciprocal trade treaty with Canada, now being negotiated, a provision that will place the importation of newsprint from Canada upon a quota basis fair and equitable to both countries. Abandonment of the maximum 40-hour week was opposed. President Burns pointed out that some mills were abandoning the NRA policies and were lengthening their working week, and the time would soon come when hundreds of workers would be forced out of employment.

Masonite Earnings Increase

Reports given at an adjourned annual meeting of stockholders of the Masonite Corporation, held at the home offices at Wausau, Wis., showed the corporation enjoyed a business increase of 55 per cent for the fiscal year ending August 31 over the previous year.

During the fiscal year, reports stated, the corporation paid all of its funded debts and interest, and also paid all back preferred dividends. On September 15 of this year a dividend of 25 cents, the first to be declared, was paid on the common stock. Profit for the year was $1,004,271, and gross sales $4,629,643.33.

These increases were made with the mill at Laurel, Miss. operating at only 63 per cent of capacity. With the improvement in building, operations will be on a large scale in the year ahead.

Officers and directors re-elected are: Ben Alexander, president; D. C. Everest, W. H. Mason, R. G. Wallace and J. H. Thickens, vice-presidents; A. P. Woodson,

(Continued on page 24)

Chicago Paper Industry Conditions Favorable

Volume of Sales of Various Grades of Fine Paper Satisfactory—Position of Sulphite Bonds Particularly Strong—Kraft Paper Division Displays Healthy Undertone—Groundwood Papers Steady, With Quotations Firm

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., November 4, 1935—A snap of seasonally cold weather together with favorable reports from many lines served as an invigorating influence on the local paper markets. Monday's meeting of the local division of the Salesmen's Association of the Paper Industry served to further bear out the optimistic predictions as virtually every line represented was said to be in a satisfactory condition. Prices in most grades are reported as stable and there is evident an undertone of feeling that prices are destined to go higher rather than to slide to any appreciable extent.

Fine papers gave a good account of themselves during the week with the sulphite bond market, in particular, reported as gaining in strength and buying scope. Krafts retained a most healthy tone with demand broadening. Groundwoods consolidated recent gains with the price structure reported firm. Books and covers found the advertising and direct mail markets more ready to drive after Fall and winter business. Expectancy of an old fashioned holiday season buoyed up the papers especially to the Christmas buying time. Waste paper showed some improvement.

Wood Pulp Traffic Rates

Lake ports are pressing rate petitions that will put them in line to handle important wood pulp traffic. Arrivals of imported wood pulp at lake ports in the navigation season closing this month probably will touch the 200,000 ton mark, a new high figure and with much of this tonnage moving from the port of entry to interior paper mills the lake ports are determined to get their share of the business. It is reported that West Fairport, Ohio, has now entered the ranks of contenders for woodpulp traffic asking a rate of 11 cents to Ohio destinations, while Toledo is before the Central Freight Association for a rate on wood pulp of 9 cents to Elkhart, Indiana. Rival ports are said to be offering evidence of their mileage relationships to the woodpulp consuming points and the cycle of woodpulp rate reductions is bringing out well prepared reasons for lower rates. The general question of ex-lake woodpulp rates from both Lake Erie and Lake Michigan ports will be considered by the Central Traffic Executive Committee of the C. F. A. lines at a series of meetings beginning November 5.

News of the Industry

George M. Seaman, president of the Seaman Paper Company and a prominent member of Chicago's imposing list of paper trade executives, has been appointed chairman of the Paper Division and given charge of raising funds locally for the $3,200,000 community chest fund now being raised in this city for some 140 local charities not otherwise given financial assistance of a direct character.

James H. Coy, Chicago vice president of the Flambeau Paper Company, has been away from his Conway Building offices for the past two weeks, utilizing the time to combine a business trip with a pleasure trip. A part of the time Mr. Coy spent with his son in Cherry River offices in Philadelphia. Jim, Senior, is expected back in Chicago the first of next week.

The Heco Envelope Company, Chicago, this week announces what it terms "an innovation in envelope papers", referring to "Ciscraft" suitable for the making of envelopes enclosing folders, brochures or broadsides printed on folding enamel or booklets or catalogs with enameled cover stock. Giving a two tone effect Ciscraft is credited with giving the "strength of kraft", "A finish in harmony with the contents" and "a perfect surface for the printing of half tones." Samples of envelopes are enclosed.

The Kimberly-Clark Corporation has done a good job of merchandising the Chicago area with a sample kit of Kimpak crepe wadding, a soft white tissue made of bleached wood fibre cellulose. Kimpak's usefulness is said to be in packing or wrapping finely finished or fragile products to prevent damage in handling or shipment. It is made in thicknesses as heavy as 20-ply and backed by various papers. Softness, whiteness, consistency of grade and resiliency are reported as major attributes of Kimpak.

Chicago's sales outlets for Hoberg Paper and Fibre Company products, are following up on a mill mailing of samples of Evergreen "Double Duty" Towels, embossed and "borated, the latter for health protection. Firms employing a number of employees were evidently on the general list of those receiving the sample of No. 100 bleached embossed made at the Green Bay mills.

Natural Dam Mill Starts

[FROM OUR REGULAR CORRESPONDENT]

GOUVERNEUR, N. Y., November 2, 1935.—Announcement is made here that operations will be started next week at the Natural Dam mill of the Rushmore Paper Company with about 50 hands employed. Plans call for the steady employment of about 150 persons with operations in full sway. The initial shipment of raw materials arrived at the plant early this week and felts and wires for the paper machine have been installed. Plans call for shipment of raw materials into the plant on the recently repaired spur track and the finished product will be shipped over the same course to the main line. A portion of the finished product will be stored in the new addition adjoining the mill and the manufactured goods will be shipped out according to market demands.

The Rushmore Paper Mills acquired the property from the Oswegatchie Paper Company early last summer. A trust mortgage of $115,000 given by the Rushmore concern to the Bank of Gouverneur to secure an issue of $115,000 bonds was filed with the deed to the property at that time in the office of the county clerk. James S. Wemyss, of Lancashire, N. H., is president and treasurer of the company.

A. C. Gault Resigns at Fort Edward

FORT EDWARD, N. Y., November 2.—Arthur C. Gault has resigned as manager of the local branch of the International Paper Company and plans to return to his home in Westfield, N. J. He has been connected with the branch here since 1929 when he was brought here from the New York office. During his stay here he made many friends who regret his departure. His successor has not yet been named.

Paper Demand Well Up to Average In Boston

Although Fine Papers Continue Rather Spotty, Coarse Wrapping Paper Is In Brisk Request—Paper Specialties Moving In Good Volume—Box Board Quotations Generally Well Sustained—Paper Stock Prices Steadier, In Most Instances

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., November 4, 1935.—Demand for paper in the Boston area averaged good last week, with October, as a whole, making a favorable showing. In some quarters of the fine paper division of the market, business was reported as rather spotty during the month. The wrapping paper demand was fairly brisk. Specialties moved in moderately substantial volume. Christmas specialties were rather active, in spite of the unseasonably warm weather. Tissues held their own. The call for box boards are fairly good. There was a little smaller volume of sales during the week, but prices were well sustained.

Business in paper stock continued in about the same volume as for the last few weeks and it is expected that this volume will continue for the balance of the year. Prices, on the whole, were very firm, except for roofing rags, which have displayed some weakness. Collections of roofing rags, however, continued in fairly good amounts. In a good many grades of paper stock there doesn't seem to be a surplus. Kraft corrugated boxes, quoted at .85, have been added to the list of old papers. White blank news advanced to 1.30 @ 1.35 from 1.25 @ 1.30, while No. 1 kraft declined to 1.05 @ 1.10 from a flat 1.10 and print manila to .45 @ .50 from .50 @ .60. In bagging, old rope has come to life, with sales made on the dock at 2.10 @ 2.25. Foreign manila rope, formerly at 2.00, was marked up to 2.10 and domestic manila rope, also formerly at 2.00, was advanced to 2.10 @ 2.25. Jute rope has risen to 1.60 @ 1.75 from 1.50 @ 1.60, domestic gunny No. 1 to 1.75 @ 1.80 from 1.65 and heavy wool tares to 1.90 @ 2.00 from 1.75 @ 1.80. Under new domestic rags, fancy shirt cuttings advanced to .0225 @ .023 from .0195 @ .021, blue overalls to .04¾ @ .05 from .04½ @ .04⅝ and O. D. khaki to .03½ @ 0.4 from .03 @ .03¼. Old domestic rags remained unchanged in price. In foreign rags, dark cottons declined to 1.55 @ 1.70 from 1.75, being quoted in some quarters at 1.55 to 1.60 and in others at 1.60 @ 1.70. New silesias went down to a range of 4.50 @ 4.75 from a flat 4.75.

The twine market continued encouraging.

News of the Industry

The Brown Company, Portland, Me., which has a Boston office, has put on the market a new white towel, with the wet strength feature. This towel is a decided revolution because it is double and contains the same drying features of the old Nibroc towel with improvements. The towel is being very well accepted by the trade, so that the machines are running full time to keep up with the demand.

Percy D. Wells has sent to the trade an attractive and useful memo book, part of which is in the form of a swatch of Franconia 100 per cent American Bond, made by the Parker-Young Company, of Lincoln and Plymouth, N. H., with sales offices in Boston. The swatch contains sheets for addresses, memoranda, and a "Cellophane" envelope for postage stamps. The sheets are of white, primrose, green, pink, canary, blue, buff, salmon, cafe, gray, goldenrod russet and cherry the last three having a humorous tinge being pages for 'phone numbers of "blondes," "brunettes" and "red heads."

The book contains information for contract bridge scoring and blank pages which can be torn off. The front cover shows an outline of the State of New Hampshire, in which is designated the location of the White Mountains, Franconia Notch, Parker-Young Spruce Forest, spring fed mountain streams and Parker-Young Paper Mills at Lincoln. A vertical perforation shows the colors in the swatch. On the back cover is attached a blotter. The cover is Franconia Ledger, Buff, Sub. 36.

In the new exhibit hall, November 11-23, the Storrs & Bement Company is to hold a typography exhibit, one of program covers, designed by craftsmen in a contest recently conducted by the *Inland Printer*. The exhibit, which is in charge of Maurice F. Blackmur, promotional sales manager, is of particular interest, because all the members of the Craftsmen's Club, an international organization, participated in the contest. The display includes specimens from Australia, Europe, Canada and the United States.

The Beveridge-Marvellum Company, Holyoke, Mass., of which Henry L. Goodman is a New England representative, has sent to the trade two new books. One shows samples of Fern-Glo, pyroxylin coated box papers, made in highly attractive sheets of onyx, blue, ivory, green, gray, pink, white and orange. The other contains samples of Shell-Glo papers, pyroxylin coated, for a similar purpose, also attractive, made in gray, pink, ivory, blue, white, green, orange and onyx.

Lieutenant Colonel Walter Merriam Pratt, head of the Pratt Paper Company, and governor of the Massachusetts Society of Mayflower Descendants, is to be toastmaster at the 315th anniversary celebration by that organization at a dinner on November 21, at the Hotel Somerset, in honor of signing of the compact that founded the first popular government.

John F. Blackman, vice-president of the D. F. Munroe Company, left Saturday on his annual hunting trip in Maine, expecting to be away ten days.

N. F. Davis, secretary of the Davis Paper Company, West Hopkinton, N. H., board manufacturers, went last week with a party to hunt for deer in the north country of New England.

The W. C. Dodge Paper Company, formerly at 221 High street, is now on the third floor at 610 Atlantic avenue.

Investigate Various German Papers

Customs officials are making detailed investigation to discover whether the manner of purchase by barter of various German papers is such as to constitute dumping or under-valuation, in accordance with the recent announcement by the Import Committee of the American Paper Industry of September 24. Investigation is being made of the shipments of the following: Bleached Imitation Parchment, M. G. Sulphite Wrapping Paper, Drawing Paper, Onionskin Paper, Bristol Board, Book Paper, Fibre Board, Sulphite Bond, Sketching Paper.

Ontario Paper Mill Activities Irregular

Improved Demand Experienced for Book, Bond and Writing Papers—Request for Coated Papers Only Moderately Active—Slight Improvement Noticed In Coarse Paper Division —Manilla and Blotting Papers Continue Steady

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., November 4, 1935.—Now that the federal elections are over and business generally is settling down, both the manufacturing and distributing ends of the pulp and paper industry in Ontario are showing signs of improvement. This is quite perceptible in some lines, such as fine papers, while in others there is only a sign of steadying down with about the same volume of business as has characterized the trade during the past few months. The average, however, indicates the likelihood of a fairly good wind-up to the present year's business. Mills manufacturing book, offset, bonds and writings are fairly active and most of the companies are experiencing less difficulty keeping their machines busy than was the case a month or two ago. During the past few weeks there has been some tendency to buy fine papers in slightly larger quantities despite the fact that the printing industry is quiet. Paper merchants, however, are placing better sized orders with the mills and there are signs that replenishment of stocks is in progress.

On the other hand, there appears to have been only very slight improvement in the coarse paper market, small quantity buying still prevailing. The paper bag market is distinctly dull, with a lack of co-operation among both the manufacturers and wholesalers. There has been a lot of cut-throat competition in paper bag circles and while no definite move seems to have been made it is stated that measures are being taken to eliminate it. It is about the only line of paper that has not taken definite reorganization steps toward much-needed protection. The twine market has strengthened somewhat, one or two lines undergoing a slight increase.

Canadian mills manufacturing blanks, manilas, and blotting paper report a steady run of business. Coated paper plants are somewhat quiet again after a few weeks of fairly good business. Trade in this line is described as spotty. There is quite a good call for glassine, greaseproof and waxing lines and light weight paper manufacturers report an improving demand and a steady market. Trade with the manufacturing stationers and paper converters is still rather quiet and the envelope trade is only moderately busy.

May Take Over Firstbrook Boxes

An offer to purchase Firstbrook Boxes, Ltd., Toronto, has been made by the Gair Company, of Canada, subsidiary of the Robert Gair Company, New York. First announcement was made this week in notices sent out by Toronto General Trusts Corporation, trustee, of a meeting of bondholders to consider a proposal for the exchange of Firstbrook bonds for income notes of Robert Gair Company, Inc. The meeting is to be held November 25. Resolutions to be submitted to the meeting will ask bondholders to approve the offer of the Gair Company of Canada, whereby in return for the sale and transfer of the mortgaged premises, bondholders will receive 40-year six per cent income notes of the Robert Gair Company, Inc., to the extent of 80 per cent of the outstanding bonds. This means that in place of the $513,940 principal amount of bonds outstanding bondholders will receive $411,152 of six per cent income notes. Provision has been made in the offer to enable the trustee to give to bondholders, so desiring, an opportunity to receive $50 cash in lieu of each $80 principal amount of income notes to which bondholders are entitled.

In view of the recent improvement in operations of Firstbrook Boxes, Ltd., it is possible that some of the large bondholders will oppose the proposal. It is pointed out that if the offer is accepted bondholders not only lose 20 per cent of the principal, but accrued interest at 6 per cent for three years. In addition, they are being asked to accept a long term income note in place of a first mortgage bond due 1948. On the other hand the market price of the Robert Gair Company, Inc., income notes show a substantial premium over the market for Firstbrook bonds.

Reorganized in 1932 Firstbrook Boxes deferred interest on its bonds until December 15 of this year in order to permit the company to improve its liquid position. Since reorganization operations have shown gradual improvement, bond interests in 1934 being earned 1.07 times before depreciation. During the current year operations have been even more satisfactory.

With the acquisition of Firstbrook Boxes, the Robert Gair Company, Inc. through its subsidiary the Gair Company of Canada, will be more strongly entrenched as the dominating factor in the paper box industry of Canada. In addition to its 73 per cent in the common stock of Firstbrook Boxes the company has a lease and option on the four plants of Canadian Paperboard Ltd. and during the current year acquired control of Corrugated and Container Company, Hamilton; the Concord Shipping Container, Ltd., Toronto; The London Shipping Containers Ltd., and the Canadian Container Ltd., at Windsor.

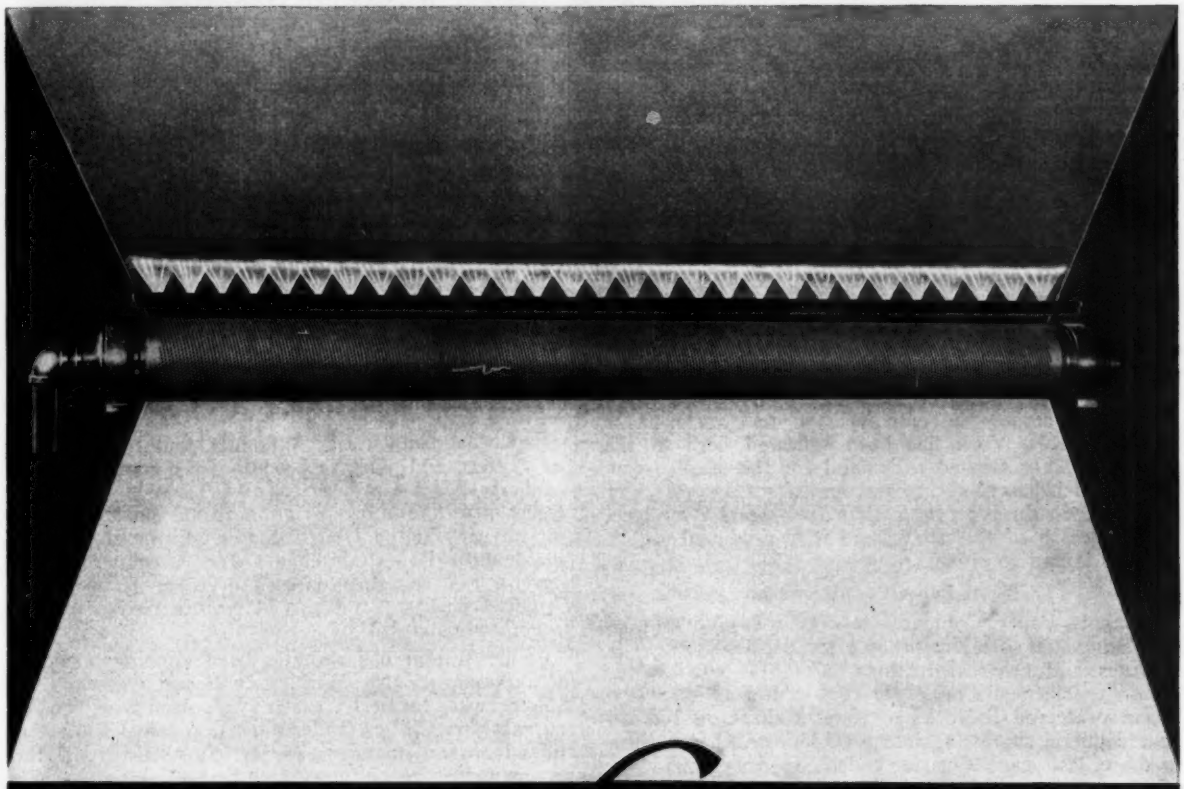
Coated Paper Under Discussion

Coated papers from every angle were discussed at the October meeting and dinner of the Toronto Club of Printing House Craftsmen in the Royal York Hotel, with Edward Harrison, sales manager of Atwell Fleming Company, as master of ceremonies. The general subject was handled by John Buss, general superintendent of Provincial Paper Ltd., while "Inks For Coated Paper" was discussed by Harold Hurd, assistant superintendent of Sinclair Valentine Company. Photo engravings and their relation to coated papers were analysed by Frank England, of Brigdens, Ltd., and the market for coated papers was handled by Robert Rawsthorn, of the Valleyfield Coated Paper mills. A sixth talk on printing coated papers was given by Edward Aitken, press superintendent of the Bryant Press. There was an excellent musical and literary program as well.

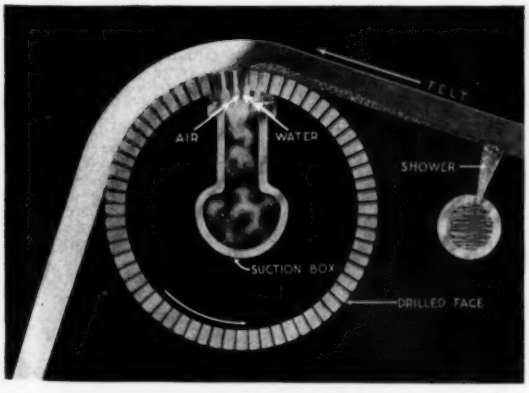
Opposition To Great Lakes Deal

The newsprint industry of Canada is right out in the open in its unanimous opposition to the proposal to sell assets of the Great Lakes Paper Company, which recently received approval of the company's bondholders. This scheme, in the opinion of the industry, would be harmful to all newsprint manufacturers, to the Great Lakes Company and to the workers and investors concerned. There is no "intrigue" and no "politics" in its opposition.

DOWNINGTOWN



FULL WIDTH FELT CLEANING *Continuously*



Saves Its Cost In a Few Months . . . Prolongs Felt Life 25% to 100%.

Travel of the felt turns the shell of the Downingtown Suction Felt Roll thus there is no friction drag over the box, no stretching of felt, and no injury to the nap. Felts cannot fill up, therefore slowing down the machine or shut-downs for washing and roping are unnecessary . . . This miniature suction roll is about the size of a plain felt roll, but it is neither removed nor suction connections broken in changing felts...The Downingtown Mfg. Co., Downingtown, Pa.

KEEP YOUR FELTS CLEAN WITH A SUCTION ROLL

Paper Business Improving In Philadelphia

Indications Are Upward Trend Will Continue Until End of Month, At Least—Quotations on Various Grades of Both Fine and Coarse Papers Reported Firmer—Demand for Paper Stock More Persistent, Due to Strike of Workers In New York

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., November 4, 1935.—The rise in business activity in the paper industry, which has been under way since mid-summer, shows no signs of slackening, and the present indications are that the upward trend will be extended through the end of the year at least. It is reported that fine and coarse prices are stiffening a little. But by and large, business confidence is improved and strengthened, and that now appears to be the main prerequisite for recovery, however, caution is still the guiding factor in making business commitments. In one of the leading paper houses here it was learned today that October this year was 20 per cent ahead of October of last year, and it will be recalled, it was reported in these columns that October, 1934, was the banner month for that year.

The strike among the employees in the waste paper industry in New York has been reflected here to the extent that it has created a demand for the surplus raw material which has been on hand here for two years. If the strike is in duration more than two weeks it will result in a dearth of this stock, and it is predicted higher prices are bound to come.

Scott Paper Co.'s Earnings

The Scott Paper Company reports for nine months ended September 29: Net profit after depreciation, Federal taxes and other deductions, $700,511, equal after dividend requirements on 7 per cent preferred A and 6 per cent preferred B stocks to $3.52 a share on 168,874 no par common shares, against $700,336, or $3.51 a common share, last year. Quarter ended September 30: Net profit, based on reports for six and nine months, $279,890 after similar charges, equal to $1.45 a common share, compared with $200,204, or 98 cents a share, in second quarter this year, and $281,165, or $1.45 a share, in third quarter a year ago.

Association Activities

The Philadelphia Waste Merchants' Association met at dinner in the Hotel Lorraine this past week and elected the following officers for the ensuing year: James M. O'Neill, president; William Lemly, vice president; William L. Simmons, treasurer; and Dominic A. Di Santi, secretary. Those appointed to the Executive Committee are William J. McGarrity, Penn Paper and Stock Company; Harry Bailey, Hemingway Company; Edward Orr, The Pioneer Paper Stock Company; George A. Di Ienno, George A. Di Ienno Company; Charles J. McNichol, Peter De Santi and Company; John Baitchman, Baitchman Bros., and Arthur Feirman of A. Feirman Company.

The idea of having regular monthly meetings at stated intervals at which time all the waste merchants of Philadelphia could assemble at a central point and discuss conditions of the trade, was well received, and committees will be appointed to plan meetings for scheduled dates to take place at an early date.

A meeting of the Wrapping Paper Division of the Philadelphia Paper Trade Association was held on Thursday last at the headquarters of the association in the Drexel Building; George D. Ward presided. The Fine Paper Division is scheduled to have a meeting on Thursday of this week at the association's headquarters; Ormand Freile will preside.

The Philadelphia Paper and Bag Institute met at the Broadwood during the week with a very representative attendance. David Kasson, executive secretary of the Cosmopolitan Paper Bag Association of New York, addressed the meeting and held close attention of all those present by his dynamic appeal for cooperation and fair trade practices. Announcement was made of a banquet which is to be held at the Broadwood Hotel on January 16. Upwards of 700 manufacturers, distributors and jobbers from all over the United States are expected to be present. A committee consisting of the following members was named to make arrangements for this banquet: Frank Dubin, chairman; George Bossler, Wm. J. Cairns, James Gallen, Benjamin Tubin, Nathanial Ceen, M. Scheff and Arthur H. Lewis.

News of the Industry

Paper Merchants, Inc. announce that they are agents for Hyfect and Kleerfect book paper manufactured by Kimberly Clark Corporation of Wisconsin, who are the largest manufacturers of groundwood book papers and rotogravures in the United States. Ormand Freile, vice president of Paper Merchants, Inc., accompanied by G. Stevens, eastern sales representative for Kimberly Clark Corporation, has just returned from a tour of the trade in Pennsylvania.

F. M. Wilson has recently been appointed sales promotion manager for Whiting-Patterson Company. Mr. Wilson was formerly eastern representative on trade journals for Chilton Publishing Company, Philadelphia, and advertising manager for U. S. Asbestos, Manheim, Pa., manufacturers of grey rock brake lining materials.

Jack Whiting, of Whiting-Patterson Company, has just returned from a hunting trip in the State of Pennsylvania, having bagged several very fine pheasants and rabbits.

Now British American Pulp & Paper Mills

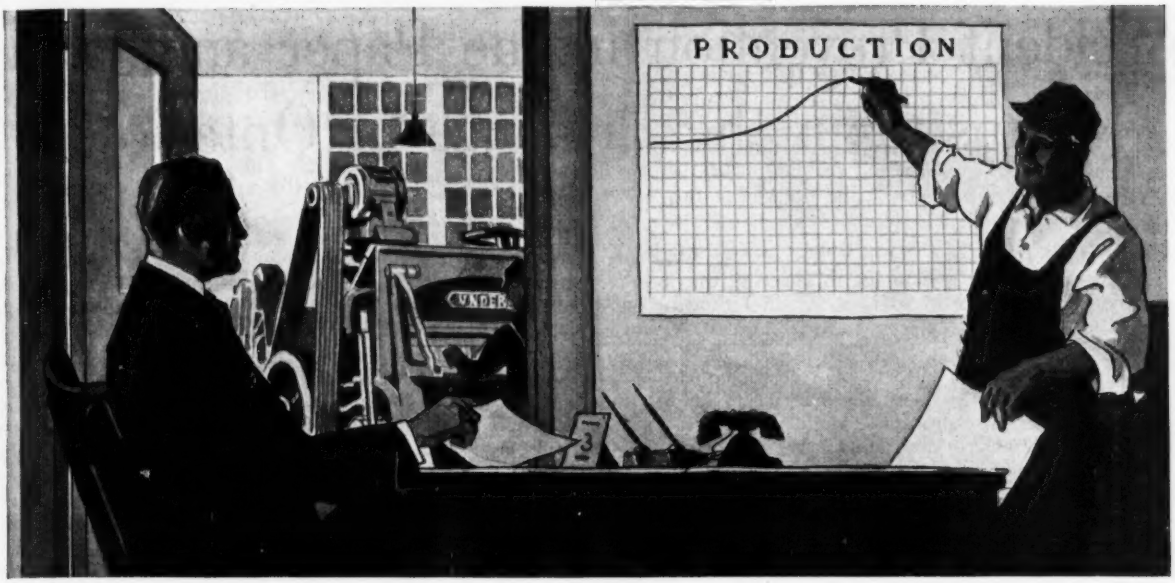
[FROM OUR REGULAR CORRESPONDENT]

VANCOUVER, B. C., November 2, 1935.—The Registrar of Companies at Victoria, B. C., recently received application from the Mutual Pulp and Paper Mills of Prince Rupert Limited for change of name to that of the British American Pulp & Paper Mills Limited. Registered address of the organization, which was recently incorporated at Victoria, is 1030 Hamilton Street, Vancouver, B. C. The company was organized less than two months ago with a view to establishing a pulp and paper mill at Prince Rupert. It purchased the government dry dock at that point and construction of its plant will commence almost immediately.

Scott Paper Co. Calls Preferred

The Board of Directors of Scott Paper Company has called the 6 percent series B preferred stock at 110 and accrued dividends to November 30, 1935.

On September 29, 1935, there were 5,335 shares of the 6 percent preferred Series B stock outstanding. The company will redeem the entire issue out of its present cash holdings without recourse to financing.



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1828

PLANT AND OFFICES AT SOUTH WINDHAM, CONNECTICUT

Accident Prevention in the Paper and Pulp Industry in the Province of Ontario*

By D. R. Chant[1]

In order to describe our organization and its functioning I must digress for a moment to refer to the Workmen's Compensation Act of Ontario which I think is one of the soundest and best pieces of legislation of its kind to be found anywhere.

The act became law in 1915 to provide recompense for accidents to workmen in their employment, to get rid of litigation, and to secure promptness and certainty of payment to the workman or his dependents without unduly burdening the employer. It extends its protection of the workman to all accidents arising out of and in the course of his employment instead of merely those caused by the negligence of the employer, as was the case prior to 1915, and it places the adjudication of claims in the hands of the Compensation board set up by the act, instead of the courts.

Under this Act all industries except a few such as farming and domestic service, are covered under one of two schedules. With the difference between these schedules we need not here be concerned. The chief point is that under Schedule 1 (which includes the greater part of industry and of course, the pulp and paper industry) the collective liability idea is applied to groups of employers. There are 24 classes each consisting of an industry or a collection of allied or similar industries and each class in turn is separated into a number of rate groups. Being one of the large industries ours enjoys an exclusive grouping as Class 2 and this class is rated by groups as follows: pulp mills and board mills, combined pulp and paper mills, converting paper mills, corrugated paper box makers, miscellaneous converting and allied plants, pulp-wood logging operations—restricted to bona-fide logging of pulp or paper companies on their own lands.

Each Employer Assessed

Each employer is required to pay into the class accident fund each year an assessment based upon his total payroll and all the cost of accidents occurring in the industry including both compensation and medical aid expenses is defrayed by the board from this "class" fund. Permanent disability pensions, or pensions to widows or other dependents of injured workmen, are capitalized promptly and the required sum transferred out of the accident fund into a pensions fund which of course is kept invested and earning interest. Administrative expense is spread on a pro-rata basis as a total assessment paid each year and there are other minor provisions such as the disaster reserve fund, which need not be discussed here. The collective liability feature of the act is the basis for our scheme of organization.

Since the whole cost of each accident in our industry comes out of the class accident fund to which all in the class contribute assessments. it naturally follows, in theory at least, that an accident happening anywhere in our plants or woods operations is a matter of concern to everybody because it must inevitably be reflected in the rates of assessment applying to all in the class. And, conversely, a good accident experience anywhere benefits everybody in the industry. This commonality of interest throughout the length and breadth of our industry is the key-note of our accident prevention organization, which was incorporated in 1915 and is known as the Ontario Pulp and Paper Makers' Safety Association.

We are incorporated under the authority of the Compensation Act which provides in one section for the setting up of such associations for accident prevention and further provides that, if the Compensation board is satisfied that such an association when formed is sufficiently representative of the industry, it may approve such rules and regulations as the association may adopt and when so approved they become binding upon all employers coming under that particular class. Our association received such recognition upon its formation in 1915 and continues to represent the pulp and paper industry before the board. Every employer whose business is from time to time assessed under Class 2 becomes automatically a member firm of our Association and remains a member so long as his business remains in Class 2. Membership fees or dues are collected by the Board as a part of the payroll assessments and thus are truly proportionate to the payrolls of the various members and the funds so collected are paid over to us as required throughout each year by the Board which exercises reasonable control of our expenditures and audits our accounts annually.

Governed By Board of Directors

Our Association is governed by a board of directors consisting of sixteen men elected at an annual general meeting of members and they are almost invariably senior executives of member firms. Careful attention is given each year to the preparation of the slate of directors for election, so that the body may represent the various branches of the industry and the geographical districts. Our present board represents about 90 per cent of the total payroll in our industry. They meet each month and really *direct* the affairs of our association.

To sum up we fully cover our industry; enjoy the confidence of the Workmen's Compensation board; are free from the annoyance of canvassing firms for membership or dues; have close contact through our board of directors with nearly the entire group of plants and operations; and are in a position to receive and give the fullest sort of co-operation in trying to control accidents and accident costs in the industry.

Our charter defines our aims and purposes as being "To promote and carry on the work of prevention of accidents in pulp and paper mills and in any other industries which may for the time being and from time to time be assessable by the Workmen's Compensation Board in the same insurance group as pulp and paper mills, and generally to represent employers and employees engaged in such industries in connection with the administration of the Workmen's Compensation Act." We interpret this to entitle us to concern ourselves not only with safety but also with reducing the cost of accidents without, of course, in any way abandoning our neutral position as representing both the employing group and the employed.

* Presented at the 24th annual convention of the National Safety Council, Paper and Pulp Section, Louisville, Ky., October 14-18, 1935.

[1] Secretary-Engineer, Ontario Pulp and Paper Makers' Safety Association, Toronto, Ont.

No "Compensation Chiselling"

Stated differently, while we consider accident cost reduction to be one of our major purposes we emphatically do not include what might be called "compensation chiselling" among the reasonable and proper means to that end. We want to see every injured workman receive full justice within the provisions of the act, and will do all in our power to see that he will get exactly that. But, we do not believe it to be in the best interests of either employers or employees to permit the excellent compensation law we have in Ontario to be abused by grafters or malignerers and will certainly do our utmost to uncover fraudulent claims, correct abuses, and bring an end to unfair practices by whomsoever committed.

Service to Members

Our service to member firms and their employees includes the following:

1. Collecting, recording, and tabulating of accident data covering every member firm's experience and each accident involving any expenditure of money from the class accident fund.
2. Distribution to all member firms, at regular intervals, of comparative statistical information on accident frequency, severity and cost so that each can see how its own experience compares with that of the class as a whole and the particular rate-group in which it is placed for assessment purposes.
3. Making periodical inspections of plans for the purpose of aiding in the recognition and removal of physical and mechanical hazards.
4. Assisting to organize and carry on accident prevention work in plants and woods operations.
5. Advising, and aiding in every reasonable way, the managements of member firms to reduce their accident costs and thus to save money through lower assessment rates.
6. Participating in safety rallies and meetings of employees, where desired, to assist the management to stimulate interest in accident prevention.
7. Conducting annual competitions among member firms in accident prevention to arouse and maintain interest.
8. Encouraging the training of as many as possible of the workers in the industry in first aid and awarding trophies and prizes.
9. Investigation of the circumstances of serious or fatal accidents and circulating of information thereon among members so that similar occurrences may be avoided in the future.
10. Advising and assisting in all matters having to do with assessment rates or compensation matters in general.
11. Arranging of meetings of geographical groups of plants and woods operations from time to time for the discussion of matters of all kinds affecting accident frequency, severity, or cost, and to encourage the various firms to improve their safety programs.
12. Acting as a clearing house for information having any sort of bearing on accident prevention or cost reduction, and rendering any other service in line with our aims and objects and the interests of member firms and their employees.

It would, of course, be foolish for me to claim that we perform all of these functions to the utmost possible extent and I make no such pretense. We want to do these things and we try to do them, but I freely admit that there is still room after twenty years for improvement.

Bulletins Stimulate Interest

"Keeping track" of the accidents which have occurred and tabulating their nature, cause, degree of seriousness, and cost for compensation and treatment does not in itself prevent other accidents from happening. The issuance of reports and bulletins showing accident experience must come "after the fact" of the accidents. Accident cost statements can only show the amount already spent. But we have found that such data in the hands of our directors and the managers of member firms does stimulate interest in the prevention of future accidents.

No manager relishes having his plant, or woods operation, near the bottom of a list showing comparative accident frequency, severity, or cost. He is likely to determine then and there to do something about it and that determination will usually result in an improvement in his record.

Accident prevention is definitely a management function. A bad accident record is evidence that the management is not doing its job and almost all of our effort is expended in trying to arouse recognition of that fact and to arouse it without antagonizing the management. Accidents can be controlled in any plant, if the man in charge really wants them controlled and sets about doing so. Accordingly, I have consciously aimed our activities at the "man in charge." We do not say: "Give us a chance to prevent accidents in your plant, Mr. Manager." We do say, "Mr. Manager, there's no reason why your record should be worse than that of Plant B, or Plant C. *You* can make it as good as theirs or better. And, Mr. Manager, we are here and ready to help you. But it's your job and we can't do it for you. How about it?"

That is our theory of operation but, of course, it is not quite so simple as it sounds. This imaginary statement doesn't take that exact form. It usually is conveyed in reports and cost statements sent mostly without comment—but showing clearly just where his plant stands. We concentrate on those plants whose experience is worse than *average*.

"Cost Rate" a Good Measure

We have been placing a great deal of emphasis on accident costs while continuing to tabulate frequency and severity figures. And I am not going to offer any apology to anybody for so doing. "Cost rate" is a perfectly good measure. If you have accidents, you'll have costs. You may be fortunate for a while and have nothing but minor accidents but time will take care of this and if you keep on having accidents your cost rate will soon reflect your frequency pretty accurately. And if you have no accidents, you'll have no accident cost.

I am willing to admit that the majority of plant managers are readily actuated by humanitarian motives. But, modern industry is organized on a competitive basis and market conditions require the plant manager to scrutinize his production cost sheet closely and constantly. The emphasis is heavy on costs. Then why try to deal with industrial accidents in terms entirely foreign to the cost sheet?

If a manager sets out to prevent accidents in his plant and succeeds, I do not care whether he was actuated by love or by economic reasons. The results are the same. We'll record the improved frequency rate, but we'll put most of our emphasis on the lower cost rate. And, if you think that plant managers and presidents do not look our cost statements over with more than a casual eye—just try misplacing a decimal point!

Causes of Accidents

During the past couple of years we have been trying to

find out more about the causes of accidents. Our research has some weaknesses, but is of enough real value to justify us in continuing it. Briefly, we set up a list of causes grouped under main headings and ask each member firm to classify its cases accordingly. We combine these separate classifications and state the result in terms of percentages of total number of cases and total cost due to each cause. The man who does the classifying in each plant is the director of safety.

Until recently most of us in thinking about accidents in pulp and paper mills had visions of vast buildings filled with heavy, fast-moving machinery—belts, gears, pulleys and shafting; heavy rolls in pairs or stacks with exposed in-running nips to catch the unwary; reels of paper and rewinders; slippery floors over which men hurried. Maybe we still see these things. But our study of causes is teaching us that the mechanical hazard is not nearly so important as we may have believed. For example, from the combined experience of the two years 1933 and 1934 we find that in Ontario mills only 7.3 per cent of our accidents and 12.4 per cent of our cost arose from what we call "faulty mechanical conditions" while 51.2 per cent of all cases and 52.4 per cent of the total cost were considered due to "human hazards" such as inattention, lack of care, horseplay, errors of judgment, unsafe clothing and acts of fellow workmen, and a further 4.8 per cent arose from the physical or mental condition of the victims. If you add to these last two groups a further 5.3 per cent of cases and 12.5 per cent of cost to cover cases due to "disregard of instructions" you have 61.3 per cent of all our accidents and 68.8 per cent of our total cost represented by accidents caused by the workmen themselves. Even if these figures were wide of the truth, which I do not admit, it is still evident that our problem calls for intelligent and alert supervision, better training, and increased "safety consciousness" rather than for more guarding of mechanical hazards.

Better "Mental Guarding" Needed

This becomes further evident from the 1934 figures covering a different sort of analysis which shows that "machinery in motion" is involved in only 12.3 per cent of our cases in the mills. Truly, pulp and paper mill accident prevention is sorely in need of better "mental guarding." It is our job to help management to arouse and keep up a wholesale interest in safety, to equip mills with the *best* safety devices—"careful men."

In woods operations mechanical causes play an even smaller part in accidents. The chief hazard is the "man with the axe" who, to judge by results in recent years, is not as cunning and dexterous with this weapon as he formerly was. There are a number of reasons for this, but the fact remains that "axe cuts" including "axe amputations" made up 29 per cent of all disabling injuries in our woods operations last year, while injuries resulting from the use or misuse of other types of hand tools such as "hooks," peavies, saws and pike-poles accounted for an additional 8.7 per cent, to produce a total of 37.7 per cent of all cases, classified as "involving hand-tools." As might be expected—the next largest group of cases (31.7 per cent) involved timber and covered injuries caused by falling trees, rolling or sliding logs, spilled or upset loads, and strains due to carrying, dragging, or lifting logs. Hazards arising out of uneven footing, complicated by deep snow and ice, and heavy underbrush produced 12.3 per cent of all cases, while frost-bite produced 3 per cent of the disabling injuries.

Cases involving equipment, other than hand-tools and including horses, as well as sleighs, tractors, winches, chains, ropes, cables, engines, plows and boats, represent only 5.5 per cent of the total while infection of minor abrasions and scratches make up another 3.3 per cent.

Teaching Men to Work Safely

From all of this it will be apparent to you that in the woods, as in the mills, the problem of accident prevention is one of teaching and encouraging men to work safely; correcting unsafe practices; discouraging the taking of unnecessary chances, and increasing the vigilance and accident consciousness of supervisors. Mechanical guarding will scarcely scratch the surface. And the difficulty of controlling working habits in the woods is much greater than in the mills because of the seasonal nature of the work and the peculiar psychology of your lumberjack. Then, too, supervision is less close in the woods and the problem is further complicated by the fact that many of the men understand little English and are unable to read in any language.

When I tell you that accident frequency in the woods is approximately 4½ times what it is in the mills and that woods accident costs are more than three times the mill cost, you will be prepared to hear that we consider the accident problem in woods operations our major difficulty and one to which we are giving a heavy proportion of our time and energy.

We did not begin soon enough, but general determination is showing promise of improvement. As an indication of progress I may say that woods accident frequency in 1934 was 8 per cent lower than in the preceding year and the total cost per $100 of payroll was also down by 9 per cent. Both rates are yet much too high to be regarded with anything like satisfaction.

Now, let me give you a few figures to indicate the progress made over a period of years in controlling accidents in mills. I have here a chart giving key figures over the 9-year period 1926 to 1934 and another one depicting the same data, graphically. You will observe that, almost without exception, the lines on the graphic chart curve in the desired direction.

Cost Figures Show Steady Improvement

Cost figures over a period of 11 years—1923-1933—show steady improvement. The average assessment rate for all plants was $1.58 per $100 of payroll assessable, while the cost of all accidents came to $1.45 made up as follows: compensation to the injured worker, or his dependents, $1.15; and cost of treating the injuries, 30 cents. This leaves eight cents and you may be interested in knowing what became of this surplus. On the average, for our whole class, each dollar of assessment collected was distributed as follows:

Cost of Compensation	70	Cents
Cost of Medical Aid	20	"
Cost of our Association	3.79	"
Administrative Expense	4.95	"
Surplus created	6.75	"
	105.49	"
Interest earned on Class Funds	5.49	"
Assessment dollar	100.00	"

The total sum collected by the Workmen's Compensation board as assessments was $2,885,688.09 and interest earned amounted to $158,475.95. The class began this eleven-year period with a deficit of $61,433 and came out of it with a surplus of $129,835.

Assessment rates tell the same story in a different way. Here is the picture they show—

	Average Rate 1923-1933	1934-1935 Rate
Pulp Mills & Board Mills	$1.69	$1.25
Pulp and Paper Mills	1.60	1.25
Conversion Paper Mills	1.18	.60
Waste Dealers and Allied Plants	1.08	.60
Paper Box Manufacturers	1.41	.90
All Plants	$1.58	$1.11 approx.

Decreases in assessment rates in 1934 from those in effect the previous year spelled a net saving of about $23,000 in total assessment for our member firms and we confidently expect the 1935 rates will carry this saving forward for another year. We will have no difficulty in justifying our existence as an association for accident prevention, so long as we can point to monetary savings year by year larger than our budget.

Interest and Responsibility

To sum up our story as an association we base our whole scheme of operation on the commonality of interest and responsibility which was written into our compensation act by its framers; ours is an adventure in co-operative service to an industry; we enjoy the support and confidence of the leading figures in that industry and have a strong group of those figures on our directorate; we believe that accident prevention is a management function and proceed on that basis: we are convinced that accidents can be controlled and we are working for lower and lower accident frequency and less and less accident cost. A little has been accomplished. Much remains to be done.

I am strongly of the belief that our future results will be such as to make what we consider a reasonably good showing today look very bad indeed.

Electric Arc Welding Equipment

A 96 page book said to be of particular interest to paper mill maintenance departments is announced by the Hobart Brothers Company, Troy, Ohio; manufacturers of electric arc welding equipment. It contains 110 illustrations showing various applications of arc welding, many of which deal with quick repairs to broken machinery and with construction of new equipment.

The text deals, in plain and understandable language, with the welding arc and equipment, with the weldability of various metals, with various types of joints and welds, with the strength, speed and cost of welding, etc. Three chapters are devoted to a complete operator's training course that enables executives to train their own men to make use of the arc in repair and construction work around the plant.

The book is neatly and attractively bound in red fabrikoid with gold letters so that it makes a desirable addition to the desk or library of the modern plant manager or superintendent. Priced to sell at $1.00, it is offered at a special introductory price of 75 cents postpaid to paper mill executives who are interested in the improvement of maintenance methods. It can be secured by writing directly to The Hobart Brothers Company, Box PT, Troy, Ohio.

Fear Disruption of American Wage Levels

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, November 4, 1935.—Alexander Thompson, president of the Ohio Chamber of Commerce, and head of the Champion Paper and Fibre Company, Hamilton, predicted today "disruption" of American wage levels if contemplated tariff reductions are effected.

"The American workingman who is out of a job and on relief," he said, "is paid more for not working than the laborer in any other country who is working full time.

"The unemployed American worker receives an average of nine to ten dollars a week," he declared, "whereas the Japanese workman gets from 25 to 28 cents a day."

Mr. Thompson advocated a tariff extension instead of lowering the duties. He asserted millions of tons of edibles and a "tremendous total of other goods are coming into American markets" despite the existing tariffs.

Metal Cleaning Handbook

The Magnus Chemical Company, 154 South Avenue Garwood, N. J., has just published the "Metal Cleaning Handbook," Equipment, Methods and Materials, with Practical Suggestions for Their Use, by Robert W. Mitchell, Ph. D.

W. M. Campbell, president of the company, in the Introduction, says in part:

"While the subject of metal cleaning plays an important part in numberless industries, it seldom requires, in any one plant, the full services of a metal cleaning expert. But there are times, when some reference, or competent authority to handle, or point out investigations leading to the improvement of your cleaning or allied process problems would be most helpful to you. It is with this thought in mind, that this book—a work and accumulation of years of practical experience in the field of metal cleaning—has been published.

"While this in intended to be somewhat in the nature of a handbook for reference purpose, the Magnus Laboratory is always available to you for the definite solution of any particular or especially perplexing problem which may lie beyond the scope of this book.

"For you to establish and maintain a specialized laboratory for the sole purpose of improving your cleaning operations, would require an expenditure of thousands of dollars.

"The Magnus Laboratory, organized to study cleaning technology, is operated to carry on research in this field and to give you direct technical service. Here, each individual problem presented is subjected to careful technical investigation and practical test. The recommendations of the laboratory, with their attendant benefits, are yours without cost or obligation.

"This book may be regarded as your general reference and guide, the Magnus Laboratory as your complete metal cleaning laboratory and the Magnus Service Department as a force of trained practical men serving you in the betterment of cleaning and allied process operations."

The book is attractively bound in board and contains over 200 pages.

The Metal Cleaning Handbook is intended to provide a ready reference and guide for the use of those directly interested in, or concerned with metal cleaning. To these, a limited number of copies are available. A request from an inquirer, on a business letterhead, giving official title or position, brings a copy. To all others, copies are sent upon receipt of the nominal sum of $1.00 to cover cost of publication. Application should be made to the Magnus Chemical Company, 154 South Avenue, Garwood, N. J.

Aetna Improvements Nearing Completion

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, November 4, 1935.—Improvements at the Aetna Paper Company's plant, Columbia street, estimated to cost $225,000 are rapidly nearing completion, it was announced Thursday by Towell Howard, treasurer of the company.

The improvements include construction of a 250-foot smokestack, rising about 150 feet; additions to the boiler plant; installation of new boilers and stokers.

The stack is being built by the Rust Engineering Company, Pittsburgh, Pennsylvania. The boiler contract has been awarded to the Combustion Engineering Company, New York, and the stokers' contract to the Westinghouse Manufacturing Company.

The foundations for the boiler house addition now are being laid. Other improvements in that part of the plant will be made as rapidly as possible, so that the work can be furnished in about three months.

VOLUNTARY PAPER CODE ADVOCATED IN WISCONSIN

(Continued from page 11)

secretary; M. P. McCullough, treasurer; E. L. Saberson of Chicago, assistant secretary; additional board members, C. C. Yawkey, Wausau; R. G. Wallace, Chicago; Ernst Mahler, Neenah, Wis.; C. J. Winton, Jr., Minneapolis, and C. H. Worcester, Chicago.

President Alexander will hereafter take over the entire management of the corporation, replacing James P. Gillies, former executive vice-president.

Patten Paper Organization

A petition has been filed with Federal Judge F. A. Geiger, Milwaukee, Wis., by the Patten Paper Company, Ltd., Appleton, Wis., asking for a financial reorganization under the federal law permitting such steps if acceptable to 75 per cent of the creditors. The petition was filed through the company's attorneys, Goggins, Brazeau and Graves, of Wisconsin Rapids, Wis., who assert the company is unable to meet its debts as they mature.

Assets and liabilities listed in the petition are set forth as equal at $1,349,787. It is set forth that the reorganization is necessary to prevent suspension of the company's operations, and sacrifices of its assets. Hearings will be held within thirty days.

Adam C. Remley Resigns

Adam C. Remley, who was engaged several weeks ago as sales manager of the Northern Paper Mills, Green Bay, Wis., to succeed L. G. Wood, has tendered his resignation on orders of his physician, who ordered him to take a long rest. He had resigned earlier as vice-president and general manager of the Patten Paper Company, Ltd. It has been reported that Mr. Remley will join the Nekoosa-Edwards Paper Company, Nekoosa, Wis., in about thirty days, in a capacity still unannounced.

W. J. Peacock, personnel manager for the Northern Paper Mills for the last thirteen years, also has resigned, effective at once. His present goal is to regain his health, which has not been favorable for some time. Duties of this position will be taken over for the time being by the general manager.

News of the Industry

Damage tentatively estimated at $15,000 was caused by a recent fire and explosion at the Northern Paper Mills, Green Bay, Wis. The blaze started in a chip bin, believed to have been caused by a torch used to cut off bolt heads. After the fire had raged for four hours, an explosion ripped the concrete roof from the building. Thirteen men were overcome by the fumes or injured, four of whom were taken to hospitals. One employee, Clarence Lytie, suffered a fractured skull.

All officers of the Institute of Paper Chemistry, Appleton, Wis., were re-elected at the annual meeting of the board of trustees held in New York City. They are: Ernst Mahler, Kimberly-Clark Corporation, Neenah, Wis., president; D. C. Everest, Marathon Paper Mills Company, Rothschild, Wis., vice-president; Dr. H. M. Wriston, president of Lawrence College, secretary; Westbrook Steele, executive secretary, and Ralph J. Watts, treasurer.

J. W. Youngchild, who has been associated with the Nekoosa-Edwards Paper Company for the last 33 years, has resigned as superintendent of the Nekoosa, Wis., mill, effective November 1. He has left for Fort Edward, N. Y. to take charge of the International Paper Company's mill there. The vacancy will be filled by the promotion of A. J. Hayes, assistant superintendent. A. L. Sarver, machine tender, will become assistant superintendent.

Fourteen salesmen of the Western Bag and Paper Company, Chicago, visited the Nekoosa-Edwards Paper Company's mill at Port Edwards, Wis. last week. They made a tour of the mill to acquaint themselves with methods of manufacture.

Hollis Whitman, production manager of the Thilmany Pulp and Paper Company, Kaukauna, Wis., and Miss Ruth Kotz of Appleton, Wis., were married last week at Appleton. They spent their honeymoon in New York, and will reside at Appleton.

Norbert Noie, chemist at the Combined Locks Paper Company, Appleton, Wis., and Miss Adele Wilpolt of Kaukauna, Wis., were married last week at Kaukauna. They spent their honeymoon in Milwaukee and Chicago, and will make their home at Kaukauna.

Mrs. George W. Mead, wife of the president of the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., submitted to a major operation at the Mayo Clinic at Rochester, Minn., last week. She is reported to be making satisfactory progress.

The death is announced of Mrs. Pauline Margaret Wesley, 36 years old, of Rhinelander, Wis. She was the wife of John A. Wesley, vice-president and sales manager of the Rhinelander Paper Company. She died following childbirth at a hospital at Marinette, Wis., and the infant daughter survives her.

Melvin H. Haskins, aged 51, of Marinette, Wis., was found dead in his automobile on a highway near Green Bay. Up to a year ago he was superintendent of the Hoberg Paper and Fibre Company, but was forced to resign because of ill health. He had lived in Green Bay for about twenty-five years.

Charles A. Goodman of Marinette, Wis., well known lumberman and capitalist, died last week as the result of injuries suffered in an automobile accident Sunday, October 27. His car crashed into the locomotive of a train near Crivitz, Wis. Mr. Goodman was a director of the Northern Paper Mills, Green Bay, Wis.

Postage Meter Tape Hearing on Nov. 15

The Agricultural Adjustment Administration announces that a public hearing has been scheduled for November 15, 1935 at 9:30 a. m. in hearing room No. 1, Bureau of Internal Revenue, at Washington, D. C. at which interested parties may be heard on the following questions: (1) whether the payment of the processing tax upon cotton is causing, or will cause, to the processors or producers thereof disadvantages in competition from postage meter tape and other types of gummed paper tape, by reason of excessive shifts in consumption between such commodities or products thereof; (2) whether the definition of gummed paper tape now in force should be revised to give effect to recent developments in the gumming industry.

The Adjustment Act provides that if the Secretary of Agriculture finds, after investigation and opportunity for hearing to interested parties, that disadvantages in competition exist, or will exist, he shall proclaim such finding and shall specify a compensating tax rate on the processing of the commodity necessary to prevent such disadvantages in competition. In no case can the tax imposed upon such competing commodity exceed that imposed per equivalent unit on the basic agricultural commodity.

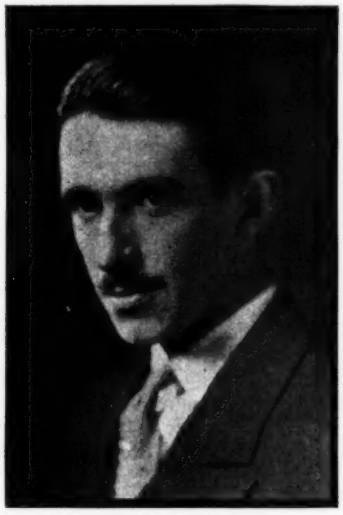
Obituary

John B. Stickle

John B. Stickle, age thirty-five, 2346 Central Avenue, Indianapolis. Indiana, was injured fatally when struck by an automobile in a fog near Westfield, Indiana, October 20.

Mr. Stickle was born in Bennington, Vermont, March 24, 1900, and had lived in Indianapolis since 1905. He was a graduate of Emmerich Manual Training High School and studied at the Carnegie Institute of Technology and the University of Illinois.

Mr. Stickle had been president and general manager of the Stickle Steam Specialties Company, 2215 Valley Avenue, Indianapolis, Ind., since the death of his father, Mr. Cole Stickle, in August, 1934.



JOHN B. STICKLE

Mr. Stickle was a member of the Broadway M. E. Church, Oriental Lodge F. & A. M., Knights Templar, the Columbus Club and the Mannerchor.

His mother, Mrs. Cole Stickle, is the only survivor. Burial was in Crown Hill Cemetery.

Fred A. Stickle, a cousin of the deceased, will immediately assume the management of the Stickle Steam Specialties Company. He has been associated with the company for the past twenty years, having been Eastern Sales Manager.

Amos L. Allen

Amos L. Allen, an employee of the Pittsfield Works of the General Electric Company for 17 years and a winner of the Charles A. Coffin Foundation award in 1929, died at his home, 88 North Street, Dalton, Mass., last week after a four weeks' illness. He was aged 40.

Mr. Allen, who at the time of his death had charge of the chemical and analytical section of the Works Laboratory, received the Coffin award in 1929 for developing the use of a higher grade of paper in place of the linen papers used for radio capacitors. This improvement brought about a saving of $175,000 at the time.

He was a member of the Technical association of the Pulp and Paper Industry, the Dalton lodge of Masons, the Saturday Evening Club, and Dalton Congregational Church. He served on the Congregational Church committee. He graduated from Dalton High School and later attended Massachusetts State College in Amherst for two years. He then went to Bowdoin College, graduating from there in 1918. His hobby was golf.

Mr. Allen is survived by his widow, the former Rachael Potter of Leominister; three children, Amos L. Jr., 15 years old, Barbara, 10, and Louise, 4; his parents, Mr. and Mrs. H. L. Allen of Dalton and a sister, Mrs. Leland N. Goodrich of Providence, R. I. The funeral arrangements are incomplete.

Henry Smith

[FROM OUR REGULAR CORRESPONDENT]

MALONE, N. Y., November 4, 1935—Henry Smith, 59 years old, prominent in paper mill circles, died here last week following a brief illness. He was superintendent of the Malone Paper Mill for over twenty years previous to the suspension of operations by the concern a few years ago. His wife, two sons and two daughters are the principal survivors.

Government Paper Bids

WASHINGTON, D. C., November 6, 1935—The Government Printing Office has received bids at 18.547 cents per pound for 7,125 pounds of 75 per cent rag buff ledger paper from the following: Whiting Paper Company, Paper Corporation of the United States, Stanford Paper Company, W. L. Jones, Inc., Whitaker Paper Company, Reese & Reese, Inc., Aetna Paper Company, R. P. Andrews Paper Company, J. R. Howarth Paper Company. Other bids received on the same item were as follows: Graham Paper Company, at 18.54 cents; Barton, Duer & Koch Paper Company, 17.24 cents; Mathers-Lamm Paper Company, 18.47 cents; and Walker-Goulard-Plehn Company, 17.5 cents.

Bids were also received at 11.543 cents per pound for 3,000 pounds (17,000 sheets) of 25 per cent rag buff ledger paper from the following: Stanford Paper Company, W. L. Jones, Inc., Reese & Reese, Inc., R. P. Andrews Paper Company, and J. R. Howarth Paper Company. Other bids received on the same item included: Whiting Paper Company, 10.499 cents; Paper Corporation of the United States, 10.499 cents; Graham Paper Company, 11.54 cents; Barton, Duer & Koch Paper Company, 10.499 cents; Mathers-Lamm Paper Company, 11.5 cents; and Walker-Goulard-Plehn Company, 10.45 cents.

For 128,000 pounds (1,000,000 sheets) of 25 per cent rag yellow bond paper; Whiting Paper Company, 9.749 cents per pound; Aetna Paper Company, 9.749 cents; R. P Andrews Paper Company, 9.67 cents; Reese & Reese, Inc., 10.71 cents; Whitaker Paper Company, 10.7185 cents; Old Dominion Paper Company, 9.74 cents; Barton, Duer & Koch Paper Company, 9.45 cents; J. W. Butler Paper Company, 9.25 cents; Paper Corporation of the United States, 9.749 cents; Mathers-Lamm Paper Company, 10.7185 cents; Walker-Goulard-Plehn Company, 9.98 cents; and Mt. Holly Paper Company, 9.06 cents.

Estate of Louis F. Hyde

GLENS FALLS, N. Y. October 28, 1935—The estate of the late Louis F. Hyde, until his death vice president of Finch, Pruyn & Co. has a gross value of $187,348.35 and a net value of $174,257.66, according to a tax appraisal deed filed with the county clerk this week. Included in the estate are stocks and bonds valued at $111,521.29; mortgages, notes, cash and insurance, $55,337.49; joint bank accounts $8,999.57; miscellaneous, $11,490. Debts and administration expenses amounted to $13,090.69. The chief beneficiaries are his wife and a daughter.

Propose Voluntary Agreement

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., November 4, 1935.—In a public hearing the expanding and specialty paper products industry today applied for labor provisions in a proposed voluntary agreement under the amended National Industrial Recovery Act.

The contemplated agreement was presented by the Expanding and Specialty Paper Products Institute whose members produce approximately 90 percent of the industry's total output. The labor provisions of the voluntary agreement are essentially the same as the old NRA code.

Irwin W. McLean, executive secretary of the Institute, presented the agreement and explained that it had been evolved to retain the gains made under the NRA code and to act as a stabilizing influence for the industry. Mr. McLean said that he knew of only two firms in the expanding and specialty products industry that had failed to continue code wage and hour provisions.

Speaking of the NRA Labor Advisory Board, John A. O'Donnell said that while applauding the efforts of the industry to carry on NRA principles the board could not voice approval to any agreement not jointly proposed by labor and industry.

The hearing was conducted by Earle W. Dahlberg, deputy director, Section No. 3, Division of Business Cooperation and the following other NRA officials participated: Allen Moore, legal adviser; Dexter A. Tutein, Industrial Advisory Board; Walter Mangum, Director, Section No. 3, Division of Business Cooperation; Jesse M. Hadley, Consumers Advisory Board.

Henry W. Foulds in Charge of Permutit Sales

According to W. Spencer Robertson, president of the Permutit Company, New York, N. Y., sales of the company's water softening equipment have increased so rapidly, and so many new products are being developed, that a decided expansion of selling scope is in sight. To correlate and direct all sales, promotion and advertising, Henry W. Foulds has been elected vice-president of The Permutit Company.

Mr. Foulds, a gradute chemical engineer, brings to his new position twenty years' experience in selling. This experience embraces a number of years in the export business in South America; the positions of vice-president in charge of distribution of a well-known line of refrigerators and vice-president of a pump manufacturing company, and a diversified background in management and organization.

Assisting Mr. Foulds will be L. S. Ferguson, manager of industrial sales; O. P. Harris, manager of domestic sales, and H. H. Wilkinson, advertising manager.

I. P. To Raze Several Idle Plants

[FROM OUR REGULAR CORRESPONDENT]

WATERTOWN, N. Y. October 28, 1935—The International Paper Company has awarded contract for demolishing several of its idle plants in the Glen Park area and also plans to raze the old Continental Paper Bag Factory here. Among the mills to be razed at Glen Park are the Remington and Ontario plants which produced paper for nearly half a century. The company decided to dispense with the idle property in preference to meeting taxes and the razing task has been under way for several days. The company will continue to control the water power rights connected with all plants.

Bare Mill Completes Improvements

The D. M. Bare Paper Company, Roaring Spring, Pa., announces the completion of extensive improvements throughout the mill and in the laboratories.

I. L. Gartland, general sales manager of the company, with offices at 415 Lexington avenue, New York City, recently said, "We are ready for all predicted and actual increases in general business with a remarkably flexible and smooth working organization. Our company enjoys a fine record for producing special colors, finishes and high speed deliveries, in addition to a well standardized line of mill brand papers. Considering the advantages our distributors and printers have available, not only in skilled supervision and careful manufacture, but the geographical location also, it is possible for us to offer unusually prompt mill deliveries on regular and special size orders.

"Our mill in Roaring Spring is only 150 miles from the Baltimore metropolitan area, 104 miles distant from Pittsburgh. 250 miles from Philadelphia and New York City 350 miles from the mill. We have 25 trucks, ranging from 2½ to 12 tons, available to supplement our manufacturing service with high speed store door delivery.

"Our company, now entering its 72nd year of business, is in the heart of the eastern paper market, and offers every facility necessary to scientific paper manufacture, including physical, chemical and control laboratories, practical, skilled paper makers, the finest raw materials and chemicals, modern equipment, and each stage of manufacture under scientific control from the raw pulp to the finished product."

The D. M. Bare Paper Company has recently released the latest broadside in their 1935 advertising campaign, featuring Ruskin Super. It is produced by letter press and effectively interprets the title of the broadside, which is "Smooth."

The D. M. Bare Paper Company, in addition to Ruskin Super, manufactures a complete line of book papers under the mill names of Chaucer, Ruskin, Tennyson, Whittier and Ainsworth.

The officers of the company are I. E. Garver, president; Russell B. Garver, vice president; L. F. Garber, treasurer and general manager; Clarence Hair, secretary.

Wiggins-Carroll Nuptials

John L. Rickey, executive secretary-treasurer and counsel of the Central States Paper Trade Association and the Middle States Wrapping Paper Association had the pleasure of arranging the details of a very interesting wedding in Cincinnati Saturday October 26 when Monte V. Wiggins, President of the Crescent Paper Company, Indianapolis, was married to Frances S. Carroll of Indianapolis, Mrs. Carroll being the widow of Thomas A. Carroll, who was prominent in national advertising circles for many years up to his death some years ago.

Those present, besides the principals, were Mr. and Mrs. Gunner Oleson of the Southern Kraft Corporation and Continental Paper & Bag Corporation; Mr. and Mrs. Wm. F. Wiggins of Indianapolis, Mr. Wiggins being a son of M. V. Wiggins; C. O. Wiggins, a brother of the groom; Mr. and Mrs. Edward J. Dowd of Indianapolis; Mr. and Mrs. Frank Langsenkamp, Jr. of Indianapolis; Mr. and Mrs. Eugene Dawson of Indianapolis; Mr. and Mrs. Harvey Weghorst, Mr. Weghorst being a sales executive of the Crescent Paper Company; Tom Fletcher of the Fletcher Paper Company, Alpena, Mich. and Mr. and Mrs. John L. Richey.

After a short wedding trip the bride and groom will, of course, reside in Indianapolis.

Production Ratio Report

The statistics are based upon paper production reports to the American Paper and Pulp Association:

COMPARATIVE MONTHLY SUMMARIES

1935	Total Production Ratio	1934	Total Production Ratio
January	65.8%	January	.....
February	70.0%	February	.....
March	70.5%	March	.....
April	70.0%	April	.....
May	69.4%	May	.....
June	72.3%	June	.....
July (b)	67.8%	July	.....
August	70.9%	August	.....
September (c)	75.0%	September (c)	59.4%
October	.....	October	64.7%
November	.....	November	61.7%
December	.....	December (a)	62.1%

COMPARATIVE WEEKLY SUMMARIES

CURRENT WEEKS, 1935		CORRESPONDING WEEKS, 1934	
*October 5	75.2%	October 6	65.2%
*October 12	76.3%	October 13	64.3%
*October 19	74.9%	October 20	66.1%
*October 26	72.8%	October 27	63.5%

The following statistics show the number of mills reporting by ratio groups:

	Number of Mills Reporting, Current Weeks			
Ratio Limits	Oct. 5, 1935	Oct. 12, 1935	Oct. 19, 1935	Oct. 26, 1935
0% to 50%	98	85	91	66
51% to 100%	247	256	241	208
Total Mills Reporting	345	341	332	274

* Subject to revision until all reports are received.
These data exclude (a)—Christmas Day, (b)—Fourth of July, (c)—Labor Day.

PAPERBOARD OPERATING RATIOS

According to reports from the National Paperboard Association per cents of operation, based on "Inch-Hours" were as follows:

1934		1935		1935		1935	
September	62%	January	61%	May	61%	Sept. 7, 1935	61%
October	63%	February	67%	June	65%	Sept. 14, 1935	72%
November	56%	March	67%	July	59%	Sept. 21, 1935	71%
December (a)	53%	April	61%	August	65%	Sept. 28, 1935	75%
Week ending October 5, 1935—75%				Week ending October 19, 1935—75%			
Week ending October 12, 1935—76%				Week ending October 26, 1935—78%			

Industrial Conference December 9

WASHINGTON, November 5, 1935.—Groundwork for industrial recovery legislation in the next Congress was laid today by Major George L. Berry, Co-ordinator for Industrial Co-operation, in an open letter to industry, labor and related trade associations.

Following an overwhelmingly favorable response to his recent letters to industrial units regarding round-table discussions "looking to the furtherance of the best means of accelerating industrial recovery," Major Berry told his press conference this afternoon that the first of these meetings will be held here on December 9.

He anticipated that between two and three thousand representatives of labor and industry will attend, adding that the Government will not participate beyond the desire of the conference for such participation.

Various branches of the paper industry are expected to be present at the conference.

A. P. & P. A. to Hold Open Meeting

An open meeting of the American Paper and Pulp Association has been called by Frank J. Sensenbrenner, president of the association, for the afternoon of Wednesday, November 20, probably at the Hotel Blackstone, Chicago. All manufacturers of pulp and paper in the country are invited to attend or to be represented.

The regular meeting of the executive committee of the association will be held in the morning preceding the open meeting.

New Waldron Gear Type Flexible Couplings

An attractive folder has just been prepared by the John Waldron Corporation of New Brunswick, N. J., which fully describes the new Waldron Gear Type Flexible Couplings. This new type coupling is designed for drives where operating conditions do not necessitate the use of a resilient type coupling and where strength is the determining factor in coupling selection. It is ruggedly built of either forged or cast steel for shaft diameters from 1½ inches up to heavy duty reversing drives. It is simple in construction, noiseless in operation for all loads and speeds and is entirely closed and lubricated, dust and moisture proof. Waldron Gear Couplings are built in two general designs: No. 1 Medium Duty—for Nominal Bores of 3½ inches and less and No. 2 Torque Ring—for larger Bores. A copy of this new folder describing the Waldron Gear Type Couplings will be gladly sent upon request.

Paper Board Association to Meet

The National Paperboard Association will hold its annual meeting at the Waldorf-Astoria Hotel, New York, Thursday, November 21.

This meeting is called for the election of officers for the ensuing year and for taking such other action as is specified in the By-Laws of the Association.

An interesting program is being arranged, which will include a report by President Sidney Frohman covering "Association Activities of the Past Year." Reports will also be made by Vice-President W. J. Alford, Jr., and by Group Chairman and others. Special recognition will be given to those members who served on the Paperboard Code Authority.

In addition, important subjects are to be considered, including a program of Association activities for the ensuing year, and it is urged that all members attend and participate actively.

Robert Gair Co. Reports Profit

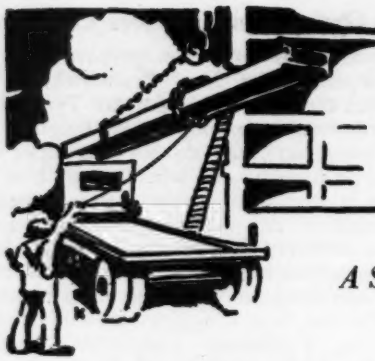
E. Victor Donaldson, president, reports for the Robert Gair Company, Inc., and subsidiary companies for the quarter ended September 30, 1935. Profit before deducting depreciation, interest on bonds of subsidiary companies and Robert Gair Company, Inc., income notes, dividend on preferred stock of subsidiary company and income taxes $331,394.32. Deductions including provision for depreciation, $161,635.28; interest on bonds of subsidiary company, $5,550.00; and dividend on preferred stock of subsidiary company, $9,750.00, amounted to $176,935.28. Profit for the period before providing for interest on income notes and income taxes was $154,459.04. The provision for interest on income notes and income taxes amounts to approximately $53,000.00.

Gibbs-Brower Co. Moves

Gibbs-Brower Company, Inc., paper and pulp mill machinery brokers have secured offices on the 20th floor in the building, located at 21 East 40th street, which is one of the properties of the Jacob Ruppert Realty Corporation. This is the first time since the organization of this company, in 1898, that they have been located above Canal street.

It is believed that the new location will be more accessible, to both the local offices of the paper companies, and also more convenient for out-of-town paper mill men.

The president of the company reports a decided up-turn in business and extends a cordial welcome to all their friends to pay them a visit at their new offices, after they have moved in, which will be in about a month's time.



CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

Mobile, Ala.—Southern Kraft Corporation, 220 East 42nd street, New York, N. Y., a subsidiary of the International Paper Company, same address, has completed plans for new one-story addition to kraft paper mill at Mobile, on which work will be placed under way at once. New paper-making and auxiliary equipment will be installed. Expansion is reported to cost in excess of $100,000, with machinery. J. H. Friend is vice-president in charge of operations.

Hamilton, Ohio—The Beckett Paper Company, manufacturer of bond and other writing papers, has plans under way for new steam-operated electric power plant for mill service, including installation of electric generator units and accessories, high-pressure boilers and auxiliary equipment. Entire project will cost over $200,000, with equipment. Bids are expected to be asked at early date. Fosdick & Hilmer, Union Trust Building, Cincinnati, Ohio, are consulting engineers.

Albany, N. Y.—The A.P.W. Paper Company, 1273 Broadway, manufacturer of tissue paper stocks, etc., has awarded general contract to J. P. Sewell, 372 Hudson avenue, Albany, for extensions and improvements in mill, previously referred to in these columns, and work will be placed under way at once. New unit will be equipped for large increase in capacity, and company will concentrate operations largely in future at the plant, in West Albany district, where work will be carried out. Cost over $400,000, including equipment. Johnson & Wierk, Grand Central Terminal Building, New York, N. Y., are consulting engineers.

Covington, Ky.—The Triangle Paper Bag Manufacturing Company, recently organized with capital of $200,000, plans operation of local paper-converting plant for production of paper bags and containers. New company is headed by S. David Shor and Edward A. Jacobs, Covington.

Charlotte, N. C.—The Old Dominion Box Company, South Building, Charlotte, with main plant and offices at 22 Ninth street, Lynchburg, Va., manufacturer of folding and other paper boxes and containers, has taken over building near Western city limits of Charlotte, formerly occupied by Savona Mill Company, and will remodel and equip for new plant. Work on building alterations and improvements will be placed under way at once. New plant will be equipped for large capacity and is reported to cost over $45,000, with machinery. Company will continue operation of other plant in Charlotte at first noted location.

Dayton, Ohio—The Aetna Paper Company, manufacturer of bond and other writing paper stocks, has taken out a permit for construction of new concrete stack at power house, about 250 feet high, on Columbia street. Contract for work was recently awarded to the Rust Engineering Company, Koppers Building, Pittsburgh, Pa.

Middletown, Ohio—The Interstate Folding Box Company, 1215 Liberty avenue, manufacturer of folding paper boxes and containers, has concluded arrangements for purchase of local industrial building formerly occupied for warehouse service by the Cullman Brothers Tobacco Company, totaling about 70,000 square feet of floor space, and will remodel and equip for new local plant. It is understood that work on building alterations and improvements will be placed under way at early date. A list of machinery to be installed will be arranged.

Martinsville, Va.—The Fibre Board Container Company, 3200 Williamsburg avenue, Richmond, Va., manufacturer of corrugated fibre boxes and containers, is considering establishment of new branch plant at Martinsville, where building is being acquired. New plant will be equipped for production of large fibre containers, such as used for the furniture and affiliated industries, and is reported to cost close to $35,000, with equipment. David A. Donati is president.

Wisconsin Rapids, Wis.—The Consolidated Water Power and Paper Company has plans for a new clay plant at Biron, near Wisconsin Rapids, to be used for coating clays for paper production. It is proposed to begin work on new unit at early date. No estimate of cost has been announced. Plans submitted by company have been approved by the State.

Cleveland, Ohio—The Hankins Container Company, 3044 West 106th street, manufacturer of corrugated paper boxes and containers, has approved plans for new addition to plant, to be two-story and basement, 54 x 102 feet. Portion of structure will be used for general production and remainder for office and operating service. General contract has been let to the Gillmore-Carmichael-Olson Company, 1873 East Fifty-fifth street, Cleveland, and work will be placed under way at once. It is estimated to cost close to $60,000, with equipment. Warner & Mitchell, Bulkley Building, city, are architects.

New Companies

New York, N. Y.—The J. B. Tag Company, Inc., has been incorporated with capital of 100 shares of stock, no par value, to manufacture and deal in paper tags, labels, etc. The incorporators include Richard Valkenburgh, 18 West 184th street, and Emanuel Pergament, 2682 Valentine avenue, both Bronx, New York.

Philadelphia, Pa.—The Federal Wall Paper Company has been incorporated in Delaware under direction of Corporation Guarantee and Trust Company, Citizen's Bank Building, Wilmington, Del.

New York, N. Y.—Central Waste Materials Company, Inc., has been incorporated with capital of $10,000, to deal in waste paper stocks, etc. The incorporators are Anthony and Louis Esposito, 263 East 142nd street, New York.

The Psychology of Safety from the Viewpoint of the Management*

By J. M. Conway[1]

The speaker said in part: Accident prevention in industry can be treated or considered under three distinct heads.

Three Distinct Heads

1. "Mechanical Safety" or the development and application of safeguards.
2. "Physical Safety" or the development of personnel.
3. "Mental Safety" or the development of a state of mind in management and personnel which promoted the Safety idea unit it became firmly fixed in both the conscious and subconscious minds of every individual employed in industry.

I believe the last classification is the most important, and that the degree of appreciation of its importance measures the degree of success attained in the Safety movement to date.

Correct Mental Attitude

For many years we have been placing safety appliances in our plants and have been hiring men and women who were physically fit and adaptable to the tasks assigned. But, it was not until we were successful in fixing in the minds of every individual in our industries the value of the correct mental attitude, that our accident lists appreciably decreased.

The movement of accident prevention has risen from an almost hopeless theme of a group of idealists, to a place where it has many friends. Unlike many other great American movements, it has found favor with both sides of every faction and every group.

Accidents More Involved

Study the accident records of today and you will find that most of them are more involved than were those of the past. Prevention of these accidents is going to require far more than application of safeguards and a list of "don'ts." It is going to require concentrated thought on the part of executives and new zeal on the part of plant foremen.

Every employee must be taught to think in terms of accident prevention. He must be taught that there is only one way to accomplish a task, and that is the "safe way." No mere order from the executive is going to do the work. Success will come through leadership and unabated effort.

Must Develop "Safety Psychology"

To lead, the executive must have developed a "Safety Psychology." He must think and act in terms of safety. He must plan his year's industrial campaign with safety as a distinct part of that campaign. He must then transmit this "Safety Psychology" to his foremen, and they in turn must give it to the men and women under them. If the entire plant organization, from executive to janitor, thinks in terms of safety, then we will have it.

An executive without "Profit Psychology" would be an executive more or less foreordained to failure. I contend that "Safety Psychology" is not only as important as is "Profit Psychology," but that it is one and the same thing and that the plant with accidents cut to a minimum has a greater opportunity to profit than has one in which the accident hazard is large. A safe plant is usually an efficient plant—and an efficient plant is usually a profitable one.

The keen executive has appreciated this fact, and to a large degree it has brought about concentration upon means to eliminate accidents. Thus we must mark "Safety Psychology" as one of the attributes of a real executive and stockholders and directors of every enterprise should demand that the man who directs their industry have it in a pronounced degree.

The Responsibility of Industry

The automobile of today is causing more deaths and injury than could have been laid at the door of industry at any time in its history. Has industry any responsibility in this situation that is daily growing more serious? I believe that it has. In fact, I believe that traffic slaughter can be reduced only if industry and other agencies adopt this responsibility and handle it just as accident prevention has been handled by the industrialist and his employees.

Much has been said of late about wealth, its taxation and its redistribution. All talk along this line has referred to money and property, but the real wealth of America cannot be redistributed because it has been conferred upon the men and women by their Creator in the form of bodies and minds that function in the degree that the Creator meant them to function. We cannot redistribute mental capacity or physical perfection. The individual either has it or it is missing upon his arrival with us.

Obligations As Citizens

We can, however, give each individual an opportunity to live under healthful conditions and to develop the mental capacity given him by the Creator. These are our obligations as citizens and we are meeting them. As men and women in industry we have the added duty of safeguarding the bodies and mentalities of our fellow workers against accident, and I am proud to say that we are performing this duty well.

If we are failing in any way, it is because we have not as yet found all of the tools required for a perfect job. We have safeguarded our plants to the *n*th degree. We have used our best intelligence in selecting the best man or woman for the tasks to be done, and we have developed "Safety Psychology" to a point where plant officials and employees look upon an accident as a direct reflection upon themselves.

Developing Mental Safety

But, I am sure all of us can go much further in developing "Mental Safety"; in fact, if we are to go farther in accident prevention, we must do so.

In closing let me pay a tribute to the paper mill industry for its wonderful record along the line of accident prevention. In my observation no other group of men in industry has done more to set up real safety organizations, nor is there an industry where managers and employees are more harmoniously organized in promoting accident prevention.

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* Presented at the 24th annual convention of the National Safety Council, Paper and Pulp Section, Louisville, Ky., October 14-18, 1935.
[1] President, Hoberg Paper & Fibre Co., Green Bay, Wis.

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FOREIGN PAPER TRADE

Exports of paper and paper products from the United States during August, according to the Forest Products Division of the Department of Commerce, 1935, show a small decline in aggregate value, compared with July. They also show a small decline as compared with August, 1934. While the volume of exports, in most instances, is larger than during August 1934, heavy decreases in shipments of newsprint, wrappings, and over issue newspapers were sufficient to offset these gains. In comparison with the month of July, decreases in the August shipments were spread over a great number of items. The heaviest reductions in volume, occurred in the items mentioned above.

August exports of newsprint, which have been running somewhat lower during recent months, were 47 per cent below the July figure and 80 per cent under the August 1934 figure. Exports of over issue newspapers dropped off 60 per cent and of wrapping papers 20 per cent, compared with the preceding month. As compared with August of last year, the decrease was much heavier.

In the finer papers and converted paper products, exports have held up better and substantial gains were registered in board shipments. Exports of boxboards and other paper boards were practically double those of either of the other two months. Exports of insulating boards dropped off 20 per cent compared with July, but were 50 per cent above the August 1934 shipments. Exports of wallboards were larger than during either of the other two months.

Total exports of paper and paper products for the month were valued at $1,716,568 as against $1,807,695 during July and $1,805,776 during August 1934.

Exports of paper base stocks recovered to a great extent from the slump of July. Shipments of sulphite pulp, which normally represent between 70 and 80 per cent of this group, were more than double the July shipments and closely approached the August 1934 figure. Shipments of soda and other wood pulp were larger than either July or August 1934 and shipments of pulpwood were larger than during the latter month. Exports of rags and other waste stock, on the other hand, while closely approximating the July figure were 55 per cent under those made during the corresponding month in 1934. Total exports in this group during August were valued at $886,154, an increase of 110 per cent compared with July, but a decrease of 6 per cent compared with August, 1934.

Imports of both wood pulp and pulpwood during August, 1935, were less than for the same month last year. Pulpwood importations also showed considerable decrease compared with July, but wood pulp importation showed a slight rise. Imports of rags and other waste for paper making again took an upward turn, the August receipts exceeding those of the preceding month by 35 per cent and more than doubling the volume of receipts for the corresponding month last year. Owing to a rise in prices, the value of these receipts showed an even greater increase.

Total imports of paper base stocks into the United States during August were valued at $7,049,648, representing 135,204 cords of pulpwood valued at $1,099,569, 142,219 tons of wood pulp valued at $5,544,794, and 4,141,283 tons of rags, waste, etc., valued at $414,283. The same imports during the month of July were valued at $7,149,519, during August 1934 at $6,962,428.

Imports of paper and paper manufactures during the month of August continued to show an upward trend. Imports of newsprint, which make up between 85 per cent and 95 per cent of these receipts, were slightly in excess of those of the preceding month and nearly 15 per cent over those recorded for August 1934. Proportionately the heaviest increase took place in imports of kraft wrapping, which nearly trebled those of the preceding month and were more than treble those for the corresponding month last year. Imports of other wrapping papers, printing papers (other than newsprint), surface-coated papers, and tissue papers were also above those for the corresponding month of last year. Total imports of paper and paper manufactures for the month were valued at $7,759,917, of which $6,770,492 represented 195,057 tons of newsprint, and 989,425 other paper and manufactures. Similar receipts during the month of July were valued at $6,532,467 and $705,764 respectively and during the month of August at $5,954,533 and $796,314 respectively.

DISTRIBUTION BEST IN YEARS

Pointing out that the volume of goods being produced and distributed is reported in many lines to be the largest in four or five years and that earnings of manufacturing industries are the best since 1930, the National City Bank of New York predicts that the business gains so far this Fall will be maintained through the rest of the year and that business will go into 1936 "under good headway."

In a tabulation of the third-quarter reports of earnings of 220 industrial companies, the bank finds that profits were 59.5 per cent above those in the third quarter of 1934; while in the first nine months of this year combined net profits increased 26.3 per cent from those of the corresponding period of last year, and were equal to 6.7 per cent of the net worth of the companies involved, against 5.3 per cent last year.

The bank cautions that recent business gains are based upon the large government expenditures and, to some extent, upon the European war scare, and says these factors should be kept in mind in judging how far the industries are recovering their self-supporting character. Even with these qualifications, however, it says, the business gains undoubtedly have a foundation in genuine progress based on improved economic conditions and relationships.

"The crops are safe and mostly harvested, and, with the long-standing surplus of farm products absorbed for the most part, the farm price structure and farm income also appear safe for some months to come.

"The increased farm income and the greater buying power of farm products over factory goods constitute the most significant improvement in economic relationships. They gave the start to the trade gain.

"Also, installation of more efficient equipment, and other advances in technical processes and management, enable manufacturers to keep costs and prices down, and sell their goods, while paying hourly wages equal to or higher than in 1929.

There is every reason to expect the re-equipment of industry to go on. Despite the unwillingness of lenders and of potential borrowers to take the risks of new enterprises, there is no lack of capital available to established and sound concerns for new equipment to reduce costs and improve their competive position.

"There is virtually no dissent from the view that the business gains of the fall to date will be maintained through the rest of this year, with probably a further rise in the indexes of industrial production. The expansion of automobile manufacture almost assures such a rise.

"With this support business will go into 1936 under good headway."

Dismisses Investigation Applications

WASHINGTON, D. C., November 6, 1935—The United States Tariff Commission has announced that it has denied and dismissed without prejudice the following applications for investigations under Section 336 of the Tariff Act of 1930: Certain-teed Products Corporation, New York City asking for decrease of duty on pulpboard in rolls for use in the manufacture of wall board; Central Fibre Products Company, Tama, Iowa, for increase of duty on straw board; and for duty increase on tubes of paper, commonly used for holding yarn or thread from Pairpont Corporation, New Bedford, Mass.; F. A. Chase & Co., Providence, R. I.; Climax Tube Company, Mystic, Conn.; Sonoco Products Company, Hartsville, S. C.; American Paper Tube Company, Woonsocket, R. I.; and Textile Paper Tube Company, Fall River, Mass.

Inland Empire To Reorganize

[FROM OUR REGULAR CORRESPONDENT]

SPOKANE, Wash., November 4, 1935.—Inland Empire Paper Company has been granted permission to reorganize under provisions of a recent federal act which permits corporations to reorganize while still operating. Petition of the paper company was approved in federal court here. Judge J. Stanley Webster set November 20 as the date for hearing on the plan.

A. W. Witherspoon, president of Inland Empire Paper Company, points out that this company has been placed in much the same position as other American paper and pulp mills, having suffered severe losses in newsprint production due to the depression and a general falling off of newspaper advertising and decreased size of newspapers. In the case of Inland Paper Company, newsprint is the principal production unit. With sale greatly curtailed, the company has said it cannot operate at a profit.

Reorganization of the company would bring new capital into active use and with this substantial sum available, new machinery could be installed to manufacture other paper products, and with increased newsprint business could again operate profitably. Present holders of first mortgage bonds, however, must consent to make their claims secondary to the owners of this new capital.

While the reorganization plan is pending, the company will operate under supervision of the federal court. Meanwhile, the concern with $4,547,894 in assets will continue to operate and a large payroll saved for the Spokane territory.

To Reorganize Philemon Creek Co.

[FROM OUR REGULAR CORRESPONDENT]

BROWNVILLE, N. Y., November 4, 1935.—Plans are under way for a reorganization of the Philemon Creek Paper Company following an order signed this week by Federal Judge Bryant. The order issued following a bankruptcy petition restrains foreclosure of mortgages or the pressing of litigations by creditors during the next two months. It also holds in abeyance the $27,000 foreclosure action recently started against the company by the Northern New York Trust Company. A petition filed by the company shows the liabilities are $50,790 and the assets $194,847. Current liabilities, however, are only $24,000 with only $6,224 in current assets, including raw materials, finished products and other items. Plant and equipment covered by the mortgage are valued at $188,623, including power rights at $27,321, power equipment $36,867 and land $10,547.

Under the order Ralph L. Hyde, of Syracuse, is named trustee of the company which is taken out of the supervision of its officers during the 60 days of grace. G. Seymour Knowlton, head of Knowlton Brothers, is appointed consulting trustee to confer and advise with the court relative to reorganization plans and the manufactured product. An inventory of property and assets will be filed with the court late this month. The company was organized a few years ago to produce paper by a patented process from de-inked and de-waxed used bread wrappers and similar waste, which would be turned through the beaters and re-pulped for reconversion into special grades of paper. Operations have not been carried on a steady basis because of lack of working capital.

Franklin Paper Co. Gets RFC Loan

WASHINGTON, D. C., November 6, 1935.—The Reconstruction Finance Corporation has announced that during August it authorized a loan of $12,500 to the Franklin Paper Company of Holyoke.

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Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

Factors of Importance in the Drying of Paper*

By F. C. Clark[1]

The paper industry generally has given much thought and study to this problem of the drying of paper. Much emphasis has been given to drying systems, drying regulators, drying temperatures, etc., without giving sufficient value to the fact that paper must not be over-dried.

Two sheets of paper, made of identical stock and with the same treatment on the wet end of a paper machine, but with a wide variation in drying conditions, will have widely different characteristics and qualities.

Qualities Lost By Over-Drying

A bond paper that has been over-dried at any time during its course of manufacture has lost certain very definite qualities as follows:

Folding, tearing and tensile strengths have definitely been decreased.

The surface is less absorbent or receptive to printing inks.

The desired degree of finish is more difficult to obtain and results in a decrease in opacity.

An over-dried paper is more sensitive to curl conditions, and more sensitive to changes of moisture in the air.

Many, if not all of these difficulties, due to over-drying can be overcome if the correct moisture content is held in the paper at all times. This at once raises the question as to what is the correct moisture content of a sheet of paper. The correct moisture content of any paper is not a fixed amount, but must vary somewhat depending on conditions of use, season of the year in which it is used, character of paper making raw materials used, character of finish desired, and other factors.

In general the moisture content of the air, or its relative humidity, varies with the season. It is generally lower in cold weather than in hot weather. It is generally lower away from lakes or the seaboard than near large bodies of water. These conditions are understood and no doubt some mills do attempt to produce paper that will meet these varying conditions of season, climate, etc.

We are all familiar with the well known fact that the moisture content of a paper or its per cent of moisture contained therein, varies over a large range of values depending on the relative humidity of the atmosphere. Recent experimental data, however, seemed to indicate some wide discrepancies from previous experiments. A further study has clearly explained these apparent discrepancies, and in addition has indicated a more reliable factor by which the moisture content of paper may be controlled.

The recent experimental data referred to, developed the fact that papers containing filler, did not contain as much moisture at a certain definite relative humidity as those papers made without filler. This study led to the definite conclusion that a measure of moisture content in any paper as determined by the usual oven drying method did not give a complete picture of conditions as they exist. It was found that at a given relative humidity paper would hold less moisture when it was made with 20 per cent of filler than when it was made without any filler. From this it is evident that the addition of any material to paper will affect the capacity of that paper to take up moisture from the air if the material so added is more or less moisture absorbent than the cellulose fibers.

Illustrating Some of the Difficulties

The following charts are presented as a means of illustrating some of the difficulties involved in this problem of devising a method for the control of the drying of paper.

Chart 1 is taken from an article by Huston, Carson and Kirkwood of the United States Bureau of Standards, entitled: "The Effect of Atmospheric Humidity on the Physical Testing of Paper," published in the "Paper Trade Journal" for April 12, 1923, pages 237 to 251, inclusive.

Chart 2 is taken from the "International Critical Tables," Volume 2, page 324.

Chart 1 shows a graphical presentation of the change in moisture content of different papers at varying relative humidities from 0=90 per cent. The tabulation at the lower part of the chart indicates the kind of papers used in the above graphical chart. From the graphical curves it will be noted that curve 2 is appreciably lower than any of the other papers in moisture content at various percentages of relative humidity. The reason for this difference has in the past not been entirely clear. It is believed, however, that a later study may throw some light on this difference.

Chart 2 shows the persentage of moisture that may be contained in various substances at relative humidities ranging from 0-90 per cent. This chart is presented in connection with Chart 1 to clearly illustrate that not only various papers but that each substance has its own characteristic for absorbing moisture at various humidities, and, I believe, clearly indicates that the capacity of a paper to absorb moisture at varying percentages of relative hu-

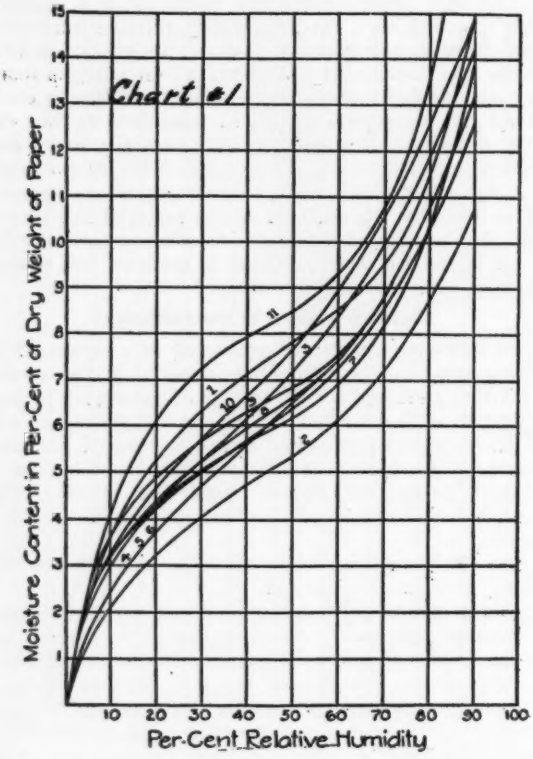
* Presented at the meeting of the New England section of the Technical Association of the Pulp and Paper Industry, Dalton, Mass., October 19, 1935.

[1] Member of TAPPI, Vice Pres., Skinner & Sherman, Inc., Boston, Mass.

midity is a combination of the moisture absorbing capacity of each type of a fiber, or other material that may be contained in a paper.

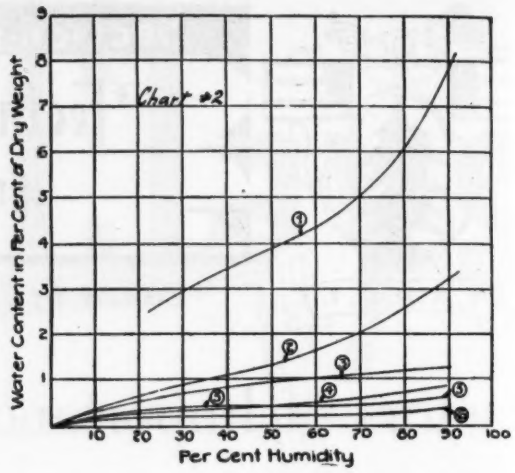
To illustrate this condition in more definite form, there is presented a Chart 3, which shows the effect of the addition of filler on the moisture content of a sheet. It will be noted from Chart 3 that there are four curves for four different papers, one without any filler, and the remaining three with 10, 20, and 30 per cent filler added. From this chart it is noted that at 50 per cent relative humidity, this particular sample of paper without any filler shows 6.4 per cent moisture content, while the paper with 30 per cent filler added shows only 4.7 per cent moisture. In other words, at 50 per cent relative humidity, the paper containing no filler will pick up 1.7 per cent more moisture than the paper loaded with 30 per cent filler.

It is believed that these charts clearly illustrate this variation in moisture absorbing capacity of different papers and at least raise the question whether the drying of paper may be properly controlled by considering moisture content alone. It is my belief that the control of drying by considering only moisture content does not permit securing all of the qualities that it is possible to secure in a sheet of paper where other factors are properly taken into account.



HYGROSCOPIC MOISTURE OF VARIOUS PAPERS (cf. [3, 8, 6, 7, 11])

Curve No.	Description	Ash, Per cent	Rosin, Per cent	Rag, Per cent	Chemical wood bleached, Per cent	Coniferous, Per cent	Manila and jute, Per cent	Lit.
1	Sulphite cellulose pulp	...	..	...	...	...	...	(3, 11)
2	Machine finish printing	24.4	1.0	...	100	...	...	(8)
3	Writing	2.9	2.2	...	100	...	...	(8)
4	Fine white writing.	0.8	1.2	100	...	...	...	(6, 7)
5	White bond	1.0	1.0	100	...	...	...	(8)
6	Fine white bond	0.2	1.0	100	...	...	...	(8)
7	Commercial ledger	0.6	1.7	75	25	...	...	(8)
8	White ledger	0.9	1.2	100	...	...	...	(8)
9	Index bristol	1.0	1.7	50	50	...	...	(8)
10	Kraft wrapping	0.3	1.3	...	...	100	...	(8)
11	Rope manila	1.6	1.5	...	...	25	75	(8)



HYGROSCOPIC MOISTURE OF SOME INORGANIC SUBSTANCES ([10, 14])

Curve No.	Material
1	English ball clay
2	Kieselguhr
3	Kaolin
4	Asbestos fiber
5	Zinc oxide
6	Glass wool

Many mills today are attempting to control drying by taking samples from the web of paper at frequent intervals, cutting them to size, weighing them in the condition as they come off the paper machine, placing them in drying ovens for a definite length of time, and again weighing the sample, and from this calculating the amount of moisture contained in the paper. This method is better than none at all, but it is very difficult to operate and the results cannot be otbained fast enough to permit accurate drying control.

Moisture Content and Relative Humidity

A very large per cent of all paper is either printed on

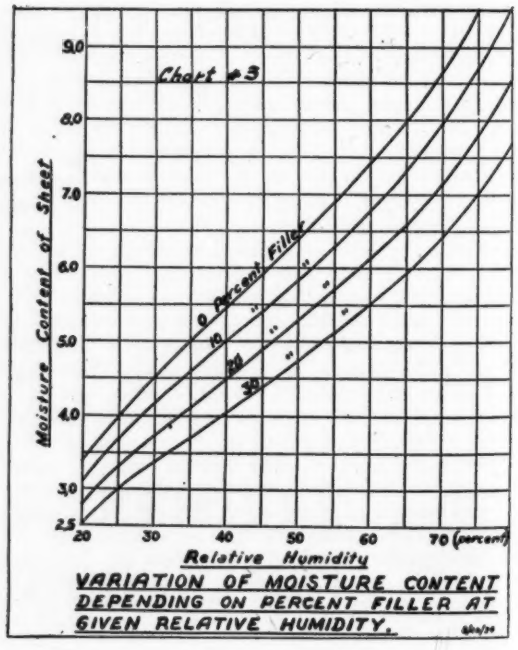


Chart #3
Moisture Content of Sheet
Relative Humidity
VARIATION OF MOISTURE CONTENT DEPENDING ON PERCENT FILLER AT GIVEN RELATIVE HUMIDITY.

or goes into a converting plant for conversion into various articles such as envelopes, bags, etc. In the printing trade especially it is being recognized that good printing results cannot be secured unless the moisture content of the paper is in equilibrium with the relative humidity of the room in which the paper is printed. The printer can, therefore, only control the relative humidity of his room, and as the moisture content of various papers varies according to its own moisture absorption characteristics, it is, I believe, essential to deliver a paper to the printer with a moisture content equivalent to the moisture content at the relative humidity at which the paper is used. This all leads to the suggestion that the control of drying might best be based upon some means of measuring the humidity of a sheet of paper as it comes off the paper machine rather than its moisture content.

Various methods have been proposed to control the drying of paper. These methods have included many varying devices such as by the temperature of the paper, temperature of the driers or temperature of steam, pressure of steam, shrinkage of the paper, change in electrical properties of the paper, etc. All of these methods fail to give entirely satisfactory results because they do not take into direct consideration the important factor of moisture content. During the past few years, devices have been built that propose to measure the relative humidity of the finished paper. It is believed that measurements of relative humidity give the best means of controlling the drying of papers, as we know that different papers vary in per cent of moisture at any relative humidity. We know further that printing plants are giving more and more consideration to humidification of their press rooms; therefore, it becomes important for the paper mill to see that the paper contains the amount of moisture that is normal to that particular paper at the relative humidity at which it will be printed. A paper so controlled in the paper mill and in the press room will give the least possible trouble due to stretch, shrinkage, or register.

Difficulty in Securing Adequate Drying Control

Much has been said in the paper industry in regard to the importance of not over-drying paper, and this applies at any point in the manufacture of any paper in which the paper goes through the drying operation; by that I mean, either before or after tub sizing, in the lofts, on the air drier, or at any other point in the manufacturing process. This matter is so important that it cannot be too frequently repeated and emphasized. It is almost universal practice in mills without adequate automatic control devices to find paper that is very much over-dried, with moisture contents as low as 1.5 per cent and 2 per cent, and an excessive amount of static electricity showing at the reel. The reason that this condition continues to exist in the paper industry is largely due to the difficulty involved in securing adequate drying control. Many mills tend toward over-drying because they are afraid of blackening the paper if too damp a sheet is produced. Those mills that have made best progress in the study and control of drying and as a result have been able to operate at the higher moisture content. have all found that they can secure greater bulk at any desired finish with a high moisture content than when they operate at low moisture content.

The finish, I believe, is a direct function of the plasticity of the sheet and the pressure per square inch on it; the plasticity in turn is a function of the moisture content. So we may assume that with a damper sheet less pressure may be used for the same finish. As bulk is also a function of pressure per square inch and plasticity, we may assume further that this will in general follow the finish. If this is true, we can relieve the pressure per square inch by removing weights or skipping nips on the calendar stack, and arrive at any finish or caliper necessary to the specifications. This lessening of pressure on the calendars can continue until we start to finish higher in the center of the web. This, of course, means that the roll is crowned for a low moisture content and should be recrowned to suit this new condition of higher moisture and higher plasticity. Several mills using a high crown on their bottom calendar roll on paper of low moisture content, have found it necessary to reduce the crown in order to get uniform finish across the sheet when operating at the higher moisture content. In every case, the result has been to produce a better paper from every standpoint where these higher moisture contents are being secured, and no difficulty has been found in securing any finish from the very roughest eggshell to the highest English or super finishes, without blackening the sheet, and with an actual increase in bulk and capacity. We all know that excessive calendering or compressing of the sheet beyond a certain point materially reduces the bursting strength and other physical characteristics.

A study has recently been made of the relation of size pick-up through a size tub in its relation to the moisture content of a sheet of paper entering the size tub. The results very clearly show that better penetration both as regards degree and amount may be secured at high moisture content as compared with tub sizing paper of very low moisture content. An overdried sheet of paper entering the size tub tends to cause the formation of a film of sizing material on the outside of the paper and to permit little or no penetration within the sheet. This surface film if excessive will result in a very brittle sheet and at the same time make the printing of the paper more difficult. The old handmade papers that were never over-dried always showed an extremely uniform penetration of the sizing material throughout the body of the paper, and tub sizing carried out in this way materially adds to the strength characteristics of the paper without in any way detracting from any of its qualities.

Piping Arrangement

In this discussion no attempt has been made to prescribe any particular type of drying system, piping arrangement, etc. for the paper machine. There is still today considerable controversy as to the merits of one, two, or more sections of driers and various other details of piping arrangement. It is, however, agreed by everyone that regardless of the piping arrangement, provision must be made to enable the drying steam to enter when and where it is needed, and to insure that condensate and air are continuously removed. Siphon pipes in general are more satisfactory than dippers, but these points while important are minor compared with the importance of maintaining the correct moisture content.

TAPPI Notes

Erik Solitander who was in this country on a traveling endowment, is now with Jay Madden Corporation, New York, as a technical assistant.

Bror N. Segerfelt, formerly technical director for Cartiera di Tolmezzo of Telmezzo, Italy, has gone with Sec. An. Xilolite, Padova, Italy, in the same capacity.

E. O. Nash is now with A. M. Collins Manufacturing Company, Philadelphia, Pa. having finished a special job at Appleton Coated Paper Company.

G. A. Baker of the Duriron Company has moved his office from Dayton Ohio to Chicago, Ill.

Leopold Werdern formerly of the Peninsular Paper Company is now located at 534 Wilson Avenue, Vallejo, Cal.

Pulping Treatment and Fiber Properties*

By Geo. A. Richter[1]

Abstract

A review of the important properties of sulphite, soda and kraft pulps and the improvements that have been made in these pulps in recent years. The contributions of new paper properties that have been made by new pulps is outlined and a prediction is made that before long paper makers will have at their disposal pulps that will possess strength, tear and fold endurance 50 per cent in excess of values that can now be realized with the best present-day products. The methods for accomplishing such a vast improvement are already known.

The past decade has brought to the papermaker a host of new fibers, many of which have found a permanent place in his selection of suitable stocks for conversion into standard papers and some of which have offered him an opportunity to produce products that were quite beyond his reach a few years ago. To provide such new cellulose material to the papermaker, the pulp producer has effected revolutionary changes in plant and process and has succeeded in the commercial development of fibers that possess papermaking properties of peculiar note and value. This present wide choice of wood fibers is of special interest when we recall that as little as ten years ago the papermaker had at his disposal an assortment of only four types of wood fiber from which he was compelled to choose his various wood fiber furnishes. In brief, these fibers comprised a groundwood, a sulphite pulp, a soda pulp, and a kraft fiber. The groundwood was used in great tonnage in those papers in which the requirements for color, strength, and permanence were of a secondary importance. The bleached sulphite found value in a long list of writings, book, and specialties where the user demanded reasonable strength, acceptable printing quality, and whiteness. Soda pulp enabled him to impart the quality of softness and in some cases to improve printability and to better the formation of the sheet. It was used in proportions that would not disturb the physical strength of the finished sheet unduly. Kraft pulp, as its name indicates, gave him a fiber that would yield a high strength, relatively cheap, brown paper for wrappings and many other uses where color and pleasing appearance were not of prime importance. Each of these four types of pulp will be discussed at greater length when comparisons are made with the more recently developed pulps.

In producing paper different types and character, the papermaker is obviously dependent upon the variety of base materials that are available and upon known technique in the conversion of such base fibers into finished paper. He knows, for instance, that in the manufacture of glassine paper he must practice a beating procedure that will favor hydration and gelling of fiber, and that he must select pulps that respond to such treatment without necessitating unreasonable expenditure of time and power. In general, wood pulps that are high in so-called pentosan groups are to be preferred, particularly if in the presence of hydrocellulose such as results when wood is cooked by the bisulphite process. Often the papermaker demands a wet pulp and is ready to accept substantial increase in freight cost to preserve the hydration properties that are conducive to conversion into a clear, greaseproof paper. Stone roll beater tackle is used to obtain the desired gelling of stock.

On the other hand, the beating procedure and the character of base stock that are best adapted to the production of a flat, soft, opaque, printing paper are quite different. Here the papermaker attemps to prepare his fiber in such a manner as to promote a cutting and fraying of the individual fiber without causing an undue amount of gelling or hydration. He knows by experience that a swollen fiber results in transparency of the finished sheet. He, therefore, avoids a stone roll in the preparation of his finished stock and selects a fiber furnish comprising stock that does not hydrate too easily. In some cases he deliberately chooses to work with a fiber that has been dried to a very low moisture content, inasmuch as he knows that dehydration is in part irreversible and that a fiber that has been dried to less than 10 per cent moisture will resist the swelling action.

Often the papermaker is faced with specifications that tax his ingenuity to the extreme. He may be called upon to produce a highly absorbent yet strong sheet. The purchaser may demand a fiber that possesses a high folding endurance, exceptional tear and a clear watermark. The difficulty of obtaining a very opaque yet high tearing sheet is one that has confronted the papermaker many times. Although it would prove quite a hopeless and endless task to attempt to prescribe a choice of beater furnish and to suggest a papermaking procedure for all conceivable types of paper, it may prove of interest to indicate to some degree the wider scope made possible by the development of new fibers, many of which possess peculiar properties heretofore absent in the standard stocks that have been at the disposal of the papermaker of ten years ago.

The nature of the subject demands a certain amount of cataloguing of properties of fibers as well as a citation of general principles that determine such physical characteristics. Therefore, at the risk of becoming boresome, such facts and theories will be presented in as concise a form as possible. Both the earlier established pulps and the newer fibers will be defined in terms of behavior and value to the papermaker. In the case of the better-known pulps an attempt will be made to point out the major improvements that have taken place in recent years. The time allotted to this subject will exclude a discussion of the so-called rag stocks, and they will be used only as reference points in drawing comparisons.

Sulphite Pulp

Bleached sulphite pulp is characterized by whiteness, reasonable cleanliness, and moderate physical strength when converted into paper. It can be hydrated in from one to three hours and causes no trouble on the paper machine. Chemically, it is identified as having an alpha cellulose content of about 88 per cent and a pentosan value of from 3 to 5. It is definitely less permanent or stable than are the better rag stocks, although papers made therefrom should endure for reasonable periods of time if stored under favorable conditions. Present-day sulphite pulp possesses a better and a more stable color than was the case ten years ago. The so-called pop test, tear resistance, and fold endurance that can be got from the present-day sulphite is from 10 to 20 per cent higher than a decade

* Presented at the fall meeting of the Technical Association of the Pulp and Paper Industry, Ambassador Hotel, Atlantic City, N. J., Sept. 18-21, 1935.

[1] Research Director, Brown Company, Berlin, N. H.

ago. Sulphite pulps are now used in ever-increasing amounts and find a place as an entire or a part-furnish in a multitude of papers that are well known to the paper trade. This pulp represents a utility fiber in that it finds outlets in most fields. Its ease of hydration, especially when undried, makes it quite suitable for ordinary glassine. On the other hand, it constitutes a major ingredient in most book papers, and if beaten with sharp tackle and with a low stock consistency, it can yield papers of fair degree of opacity, flatness, and in many cases with an acceptable wet expansion.

Sulphite papers are often processed with a rosin beater size and with a starch tub size. New rag stock paper when similarly processed is somewhat higher in pop test, decidedly higher in tear resistance, and much higher in folding endurance. It is also a well-known fact that on subsequent surface-sizing with glue, followed by air-drying, the rag paper augments its physical tests in higher percentages than is the case with sulphite paper. In keeping with most fibers that hydrate easily, papers that are made from sulphite pulps do not watermark as easily as do the freer stocks that are processed in a similar fashion. Sulphite pulp is used in many mixed furnishes. When added to rag stocks, the prime purpose is to reduce cost with as little sacrifice in physical properties as possible. When used with old rags or with weaker wood fibers, it often enables the papermaker to better his tests and possibly to add to the cleanliness of the sheet.

Soda Pulp

Soda pulps are of a deciduous wood origin. Poplar and hardwood are most generally used for the purpose. Such pulps have low fiber lengths. Because of the alkaline cooking process by which they are made, the fiber is very free and resists hydration. Unhydrated fibers do not shrink appreciably when dried and consequently paper that contains substantial quantities of soda pulp is relatively soft and rather bulky. The low shrinkage on drying is accompained by a correspondingly low expansion on rewetting. As a result of this property, soda pulp is used in fair amount in so-called low-expansion papers. Its inherent physical weakness precludes the use of large percentages except in cases where very weak papers are acceptable.

Soda pulp differs chemically from pulp that has been cooked by the sulphite process. Present-day product contains about 80 to 84 per cent alpha cellulose. It is high in pentosans groups, often reaching 8 to 12 per cent. This high pentosan value bears a direct relationship to the base deciduous wood, which is richer in pentosans than is softwood. Pentosans resist the solvent effect of alkaline solutions such as used in the soda cook more successfully than they do the acid sulphite liquors. At first thought it may seem a paradox that the high pentosan soda pulp should resist hydration, in view of the fact that in the case of sulphite pulps the pulp manufacturer often favors increased ease of hydration by a deliberate adjustment of the acid cook conditions that will cause less removal of pentosan groups. It should be noted that soda pulp does not resist hydration because of the high pentosan groups present, but that such freeness must be attributed to changes in the physical form that have been brought about by the severe action of the alkali during the cooking. As will be pointed out later, it is possible to restore hydration properties in an alkaline-cooked fiber that is rich in pentosans but relatively inert to hydration.

Soda pulp has never equaled sulphite fiber in brightness of fiber, although in later years there has been an improvement in color when compared with soda pulp of ten years ago. The physical character of soda pulp makes it in a sense a specialty fiber. It cannot be used successfully in glassine or in hard papers; neither can it be used in strong papers except in limited proportion. It is manufactured in considerably lesser amounts than is sulphite and will probably increase at a much lesser rate.

Kraft Pulp

Although kraft pulp has undergone considerable improvement in the past ten years, it still remains a brown fiber suitable for the fabrication of strong, coarse papers such as typified by wrapping, envelope, twisting, card stock, and the like. Its low cost of manufacture permits the papermaker to employ it in those cases where low selling price will encourage its extended use. Kraft pulp is of coniferous origin. It is high in lignin residues and contains from 7 to 10 per cent pentosans. The kraft cooking liquor, although alkaline, contains substantial percentages of sodium sulphide which affects the residual pentosans less adversely than does the sodium hydroxide. The kraft fiber is relatively free but will hydrate to yield a hard, firm, exceptionally strong sheet. In kraft fiber we have an illustration of the basic principle that any pulping procedure that will remove ligneous groups from wood under conditions that will not permit the drastic hydrolysis of the substantially delignified fibers, and that will not allow major injurious physical changes to occur by the severe action of alkali on both cellulose and residual pentosans, will result in a strong, tough fiber which when hydrated will produce papers of outstanding strength, tear resistance, and fold endurance.

A properly cooked kraft fiber is prepared under conditions that will remove lignin groups with a minimum hydrolysis of cellulose and with little injurious effect on residual pentosan groups. Some investigators have explained the beneficial result that is obtained with a sulphide-containing alkali by its reducing nature. There is sufficient evidence to believe that the substitution of sodium sulphide for some of the caustic soda also diminishes the injurious effect of the more active alkali on the cellulose and the pentosans and, therefore, favors a higher retention of the inherent strength of the cellulose fiber. Likewise, it has been established that when sulphides are substituted for part of the caustic in the alkaline cook liquor and when given cooking conditions are maintained, the resulting pulps have higher so-called cuprammonium viscosities than when the sulphide constituent is omitted. It is also known that higher viscosity values on fibers are usually accompanied by correspondingly higher physical tests in the case of pulps that have been cooked similarly.

Hardwood Sulphite

The last few years have brought forth a new sulphite pulp of deciduous wood origin. Aspen sulphites have been available to the papermaker for nearly ten years and more recently the paper industry has absorbed a considerable tonnage of the hardwood sulphite pulps. Such pulps are characterized by brilliant color and by a retention of beating properties similar to those that are found in the better-known softwood sulphites. The shorter fiber length is necessarily accompanied by a lower potential strength than in the corresponding spruce products, but surprisingly good strength results have been attained with this fiber when produced from some species of hardwood, particularly birch, and when beaten properly. It lacks the pronounced softness of a soda pulp and it hydrates readily. It can be used in substantial percentages without substracting from the firmness that is often sought in a bond or ledger pulp. In contrast to the usual soda pulps, the hardwood sulphite pulp can be added to the beater or to the beater chest with little or no beating, without encountering

the appearance of fuzz on the paper that is made therefrom.

This interesting fiber can be used advantageously to improve the fineness of a paper that depends upon a coarse, strong fiber such as a bleached kraft for its strength. In respect to stability, it resembles present-day softwood sulphite.

Alpha Fiber

Of the newer pulps, Alpha fiber was developed to meet needs for a stock that possesses a combination of characteristics not found in the longer-known wood fibers. This pulp when produced from a coniferous base has the softness of a rag stock, the tear of a kraft fiber, and a cleanliness and color that exceed the best bleached sulphites. As its name implies, it is high in alpha cellulose. Softness has been imparted by a removal of pentosan groups and by the elimination of hydrocellulose that is unavoidable when wood is cooked in an acid liquor. So far as can be determined by accelerated aging in heated air, in sunlight, and in acid atmospheres, it appears to have the permanence of a rag fiber. Although the properties of a softwood alpha fiber can be varied within wide limits by effecting major changes in cooking conditions and in the refining steps that follow, in general this purified fiber resists hydration and when finally beaten for longer periods of time, it does not readily take on the hardness that accompanies an extended beating of a strong, high-pentosan fiber of the draft family. Relative absence of the hydrocellulose and pentosan groups is undoubtedly responsible for the retention of softness in the sheet that has been made from a well-beaten stock. Freedom from the hemi-cellulose groups may also explain the fact that when alpha papers are glue-sized and air-dried, the increment in pop test and fold endurance is considerably better than in the case of sulphite papers.

Alpha fiber is not a good base material for conversion into glassine paper. On the contrary, it lends itself admirably in the production of papers in which opacity is a greater asset than is transparency. It offers added quality in a great variety of products such as bonds, ledgers, coating, and specialty fields. Because of its higher degree of chemical purity, it is used in great tonnage for conversion into waterleaf papers which are then treated by chemical processes such as used in the parchment and in the vulcanizing industries.

In recent years a high alpha cellulose fiber has been made from a deciduous wood base. It is necessarily of short fiber length and deficient in tear resistance and fold endurance. Its chief value lies in its inherent softness and absorbency. In color and cleanliness it surpasses soda pulp and is usually prescribed as a part-furnish where bulk, opacity, and good formation of sheet are required. Its bright color and relative permanence permit its use in the highest grade papers. Just as in the case of the purified coniferous fibers, this material because of its high chemical purity is very suitable in those industries where waterleaf paper is subjected to various chemical treatments.

Bleached Kraft

One of the outstanding achievements in the pulp industry in recent years has been the appearance of a bleached kraft fiber of outstanding toughness and strength. The papermaker now has in his possession a fiber that has been sought for many years. Some of these bleached kraft fibers equal the color of a bleached sulphite pulp of ten years ago. It is reasonable to expect that the next few years will bring forth bleached krafts that will equal the color of the brightest of present-day sulphite pulps.

By adjustments in the cooking practice and by use of multiple-step bleaching the papermaker has succeeded in retaining the full strength of the original kraft fiber when measured in terms of pop test, tear resistance, and fold endurance. Its behavior when hydrated is much the same as the raw fiber itself. There is a tendency for such fibers to take on a transparency as beating continues. This property is undoubtedly related to the high percentage of pentosan groups and to the successive refining steps that are employed in the bleaching sequence. The addition of wet or partially dried bleached kraft to a sulphite furnish can cause remarkable improvement in the physical tests of glassine paper without impairing its clarity.

When used alone, bleached kraft is likely to yield a coarse paper unless special beating procedures are adopted. A sharp tackle will favor a better texture of paper and will retard the transparency that attends when a fiber is hydrated in a beater equipped with relatively blunt bars. Often bleached kraft is used to impart unusual strength and a second fiber is added to the furnish to improve the formation, the watermarking properties, and the texture of the sheet. From 10 to 30 per cent of a hardwood sulphite enables the papermaker to realize these improvements with a minor sacrifice in physical test.

When bleached kraft is used in a substantially 100 per cent furnish and if reasonable care is exercised in beating the stock, one can produce paper that has the strength, the tear resistance, and the folding endurance of a sheet that has been processed from new rags. Such a paper is somewhat inferior in respect to color, definitely inferior in respect to texture and surface, and exhibits less stability when exposed to air or sunlight.

Because of the length and strength of the kraft fiber and in view of its acceptable color, it will be used in increasing proportions as an ingredient in a multitude of papers where physical tests are of importance.

Refined, Semi-Bleached Kraft Fibers

This group is characterized by physical tests that outrank the highest grade of kraft pulps and a color that resembles a pale manila fiber. Papers that contain this fiber are less harsh in texture than kraft or bleached kraft papers. Such papers possess a high degree of leathery toughness. The fiber is more stable than kraft fiber. Whereas kraft pulp and bleached kraft fiber have an alpha cellulose content of about 89 per cent, the refined semi-bleached kraft fiber contains about 93 per cent alpha cellulose. The pentosan groups are present to about one-half the extent to which they are found in kraft. In spite of the relatively high alpha cellulose content and the presence of pentosan groups in appreciable quantity, the fiber if undried will hydrate in a stone roll beater to give a splendid base for a glassine paper stock of outstanding strength and good quality. On the other hand, when beaten in an ordinary hollander equipped with blunt tackle, it can withstand a four-to-eight-hour beating period without causing embrittlement of paper that is prepared from the beaten mass. This type of fiber is admirably suited for papers that carry specifications that have heretofore been made exclusively from rope or manila fibers.

Sodium Sulphite Pulps

Although the bleached alkaline sulphite pulps have been known and evaluated by the producers of such fiber during the past few years, the fiber has not been generally available to the papermaker. This pulp is characterized by high physical tests and if cooked under favorable conditions and produced from a long-fibered softwood, the strength, the tear resistance, and the folding endurance that can be obtained with proper beating equal that of a

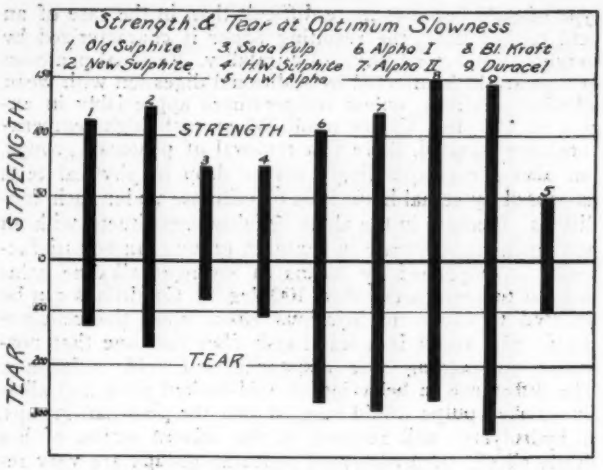
good bleached kraft. The present cost of manufacture is probably responsible for its relative unavailability to the papermaker. When the adequate enconomic recovery of cooking chemicals has been more fully worked out, this fiber, which possesses real merit, will undoubtedly be used in larger quantities.

Charts Showing Relationship Between Physical Properties

A few charts will be helpful in establishing relationships in physical tests of the various pulps that have been discussed. It is to be noted that the data that are used in preparing these curves were obtained by so-called ball mill beatings. It has been the writer's experience that in general the laboratory findings can be translated into expected performance in mill operations. This has been particularly true in the case of strength and tear tests. The folding endurance values have been omitted deliberately, inasmuch as such figures obtained from laboratory beaten fibers do not always coincide with corresponding data that are obtained when such stock is beaten in a mill hollander. One must also remember that these test values are procured from unsized paper test sheets. This consideration is important when one recalls that beater size and more particularly surface glue size can cause major and in some cases very surprising changes in physical properties of paper so treated.

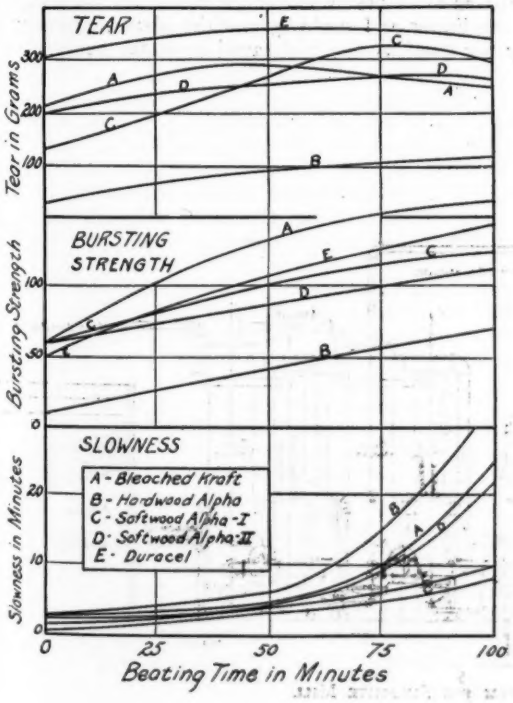
On the whole, one is justified in making some generalization pertaining to the paper qualities and test values that may be expected from pulps of various origin and history. The following will suffice to illustrate the point:

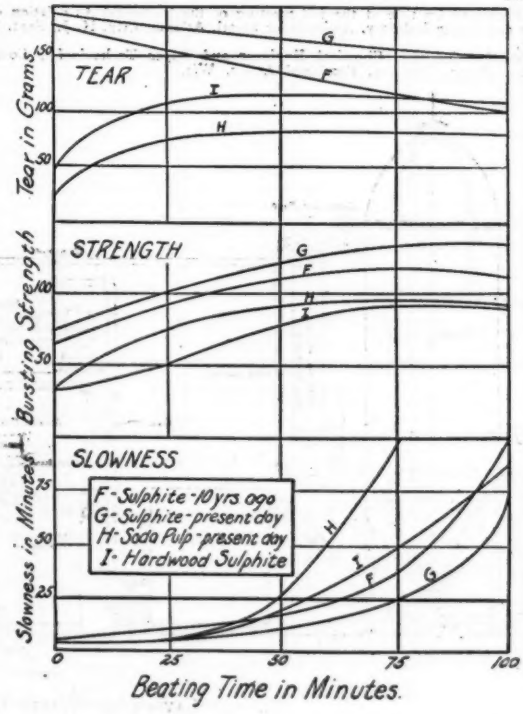
(a) All cellulose products that depend upon their isolation from wood by an acid process are lower in pentosans than are pulps that are produced from the same type of wood and with alkaline cooking liquors. The pentosans and hemi-cellulose groups in a bisulphite pulp are, however, more easily hydrated and when so hydrated result in a sheeted fiber that assumes transparency and that is less tough and pliable than in the case of similar sheets produced from beaten alkaline cooked pulps, except in those



cases when the acid-liberated fiber is subjected to a secondary treatment in which pentosan groups and hydrocellulose are removed. When such removal is effected by alkaline reagents, the net result is a fiber of outstanding flexibility and with properties that simulate rag stock. All acid cook processes favor a partial hydrolysis and degradation of cellulose, such degraded products remaining in the fiber unless removed specifically by supplementary reagent. The treating conditions by which the pentosan groups and the hydrolyzed cellulose are removed can influence the papermaking properties of the ultimate product profoundly. Strong alkaline solutions at any temperature and weak alkalies at temperatures higher than 100 deg. C. affect the papermaking strength and particularly the fold and tear adversely.

(b) Alkline cooked wood fibers are relatively high in pentosan and hemi-cellulose groups. The cellulose itself and the residual pentosans suffer but little hydrolysis when pulp is so prepared, and although the hydration of this





type of pulp becomes more difficult than in the case of an acid cooked fiber, the resulting paper is characterized by toughness and great physical durability. Residual pentosan groups are little affected by additional digestion with weak alkaline solutions, unless temperatures appreciably in excess of 150 deg. C. are used. When such high temperatures are adopted, there is a removal of pentosan groups, but also a correspondingly severe drop in physical tests as caused by actual hydrolysis of cellulose under such conditions. Increase in the alpha cellulose constituent with an accompanying decrease in pentosan groups can be satisfactorily accomplished by means of stronger alkaline solutions at temperatures below 100 deg. C. Conditions can be selected to cause no injurious effect upon the cellulose itself. The result is a less harsh fiber and one that possesses outstanding tear resistance and fold endurance. The difference in behavior of acid-cooked fiber and alkaline-cooked pulps would suggest that the pentosan groups, if hydrolyzed, will respond to the solvent action of hot dilute alkali. Unhydrolyzed pentosan groups are very resistant to weak alkaline solutions even at high temperatures. There is a likelihood that the chemist will be justified ultimately in classifying the pentosan groups in much the same manner as has been universally adopted for cellulose, namely a division into groups that will be designated as alpha, beta, and gamma pentosan groups.

As a final thought ,it may be well to speculate regarding the future development of new wood fibers by the pulp maker. The possibility of preparing wood fibers that surpass present commercial products in papermaking properties has already been demonstrated. In fact, it is fair to predict that the day is not far off when the papermaker will have at his disposal pulps that will possess papermaking strength, tear, and fold endurance of 50 per cent in excess of values that can now be realized with the best present-day products. The methods for accomplishing such a vast improvement are already known. The actual practice of such processes is contingent upon the engineering advance that will enable the manufacturer to offer such fibers at reasonable costs to the consumer. These problems are not insurmountable.

The Paulson Process for Spent Sulphite Liquor Utilization*

By Sidney D. Wells[1]

Abstract

A progress report and heat balance concerning the Paulson process of evaporating and burning sulphite waste liquor.

The introduction of indirect heating of the liquor and the use of screw presses to remove liquor from the pulp from the blow pits are the most recent refinements to the process.

At the annual meeting of the Technical Association in New York in February, 1933 H. S. Kimball (*1*) presented an analysis of the Paulson process (*2*) for the evaporation and combustion of waste sulphite liquor. The conditions contemplated at that time showed that more than enough heat was available to supply the steam for the evaporation of the liquor and cooking, and the plant necessary would pay for itself by the coal saved in steam generation. Ex-

* Presented by title at the fall meeting of the Technical Association of the Pulp and Paper Industry, Ambassador Hotel, Atlantic City, N. J., Sept. 18-21, 1935.

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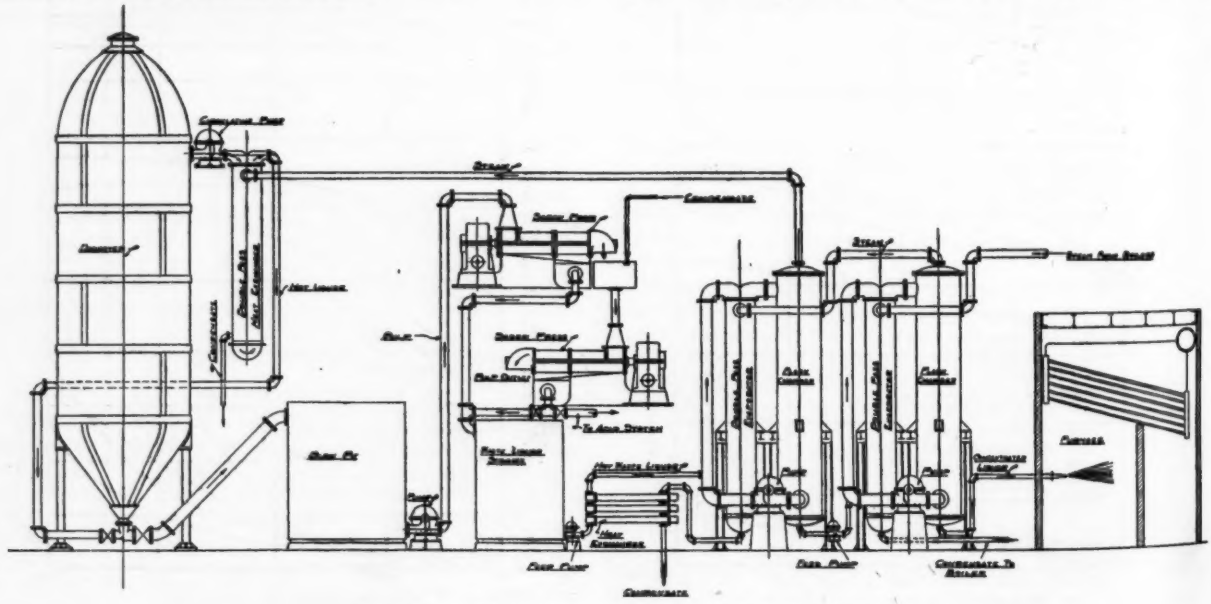

LAYOUT FOR WASTE LIQUOR SYSTEM FOR SULPHITE MILL

perience since then has shown that some of the objections brought out in the discussion at that time are unfounded and modifications and improvements since then make possible the displacement of most of the coal if not all by waste sulphite liquor so that a mill can manufacture and dry sulphite pulp without depending on any substantial source of fuel other than the lignin removed from the wood in the cooking process.

It has been considered unwise until recently to burn waste sulphite liquor in furnaces under standard boilers because of the corrosive action of the sulphur dioxide in the flue gases. The dew point of sulphuric acid under the conditions of combustion is well below 400 deg. F., (*3*) however, and, with flue gas temperatures above that temperature, no corrosion from sulphuric acid is possible.

This has been amply demonstrated by over two years experience (*4*) in the generation of steam with gases testing as high as 20 per cent sulphur dioxide as well as from the gases quite high in sulphur dioxide and moisture in sulphate liquor recovery. Many common fuels such as coal and oil often contain relatively large amounts of sulphur and are burned under suitable conditions without corrosion from contact with the boiler surfaces.

Recent Refinements and Improvements in the Paulson Process

The refinements and improvements introduced since the original work by Mr. Paulson are as follows:

1. The use of indirect heat in digestion of the pulp making possible the use of steam at 55 pounds absolute pressure for cooking and the use of the condensate for part of the heating of the spent sulphite liquor on its way to the second effect evaporation.

2. The use of two screw presses in series to remove the liquor from the pulp taken from the blow pits without dilution and the return of the effluent from the second press to the acid system thereby eliminating all waste from the sewers except the 5.4 per cent of the total soluble solids which occur in the pulp delivered from the second screw press.

The use of heat exchangers and indirect heating in the cooking with steam at a pressure of 55 pounds per square inch absolute makes possible the use of much smaller evaporators and a steam pressure of 165 pounds absolute from the boilers instead of the boiler pressure of 195 pounds absolute which was considered necessary at the time that the use of the system in direct cooking was contemplated. The change makes possible the use of the Paulson system in practically every sulphite mill in operation without any modifications of the existing boiler plant.

The use of screw presses is made possible by the recent application of acid resisting steel in the fabrication of the worm screw and the protection of the rest of the press from corrosion. Improvements in construction have also been made which make possible continued operation with the delivery of pulp between 40 and 50 per cent air-dry basis.

The return of the effluent from the second press makes possible all the advantages claimed from the return of soluble solids in digester liquor relief and furthermore the removal of 94.6 per cent of the soluble solids from the pulp without causing any dilution of the liquor whatever.

Paulson Process vs Low Pressure Evaporation and Burning

In considering the use of the Paulson system the question is likely to occur as to what are its merits as compared with the use of multiple effect evaporation for concentration without any connection with steam used for cooking. Theoretically equal advantages are possible by the use of extraction turbines and the bleeding of steam for cooking and evaporation without any direct tie up between the two. As a practical consideration, however, waste sulphite liquor is subject to abominable foaming at low pressures and concentrations. The viscosity of the concentrated liquor is also very much reduced by operation at the temperatures attending the higher pressures. The combination of all of the factors made use of in the Paulson process eliminates trouble from foaming and circulation so that matters for serious consideration in the other systems do not occur herewith. The greater simplicity of the Paulson process and the extremely low investment required for installation make it still more attractive for the established mill which otherwise would be confronted with numerous changes, additions and adjustments of existing equipment and flow sheet.

The sequence of apparatus and flow in the Paulson process as it has been developed up to the present time is shown in Fig 1.

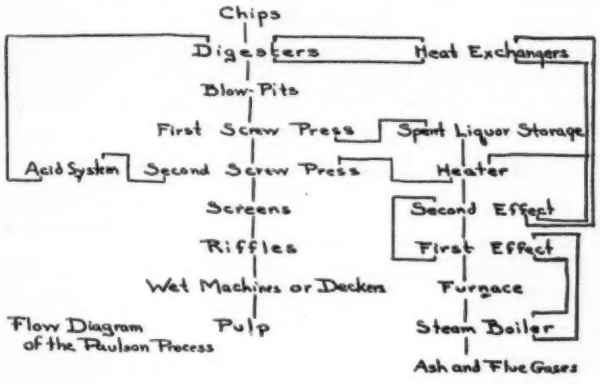

FIG. 1.

Factors on Which Paulson Process Is Based

The factors on which the Paulson process is based have been ascertained by numerous authorities from experience in many sulphite mills and by some very exhaustive work under the direction of Mr. Paulson on mill scale and semi-mill scale runs. The following will serve to check the succeeding analysis.

Solids in liquor from one ton (air dry basis) of general utility, easy bleaching sulphite pulp	2300 pounds
Water in liquor from digester, indirect cooking, at end of cook using wood under extreme conditions of moisture	15300 pounds
Fuel value of 1 pound of solids in waste sulphite liquor	8000 B.t.u.
Coefficient of heat transmission, circulating liquor between 9 and 10 feet per sec. Containing 20 to 25 per cent solids under conditions of second effect	650 B.t.u. per sq. ft. per deg. F.
Containing 50 to 57 per cent solids under conditions of first effect	330 B.t.u. per sq. ft. per deg. F.
Heating Surface proposed for each heater handling the liquor from a 100 ton pulp mill	2000 sq. ft.
Steam at 55 lbs. absolute pressure required to cook one ton of pulp by indirect cooking	5000 pounds
Temperature of liquor in storage	180 deg. F.
Specific heat of liquor containing 15 per cent solids	.925
Specific heat of liquor containing 23 per cent solids	.885
Temperature of condensate leaving liquor heater	190 deg. F.
Rise of boiling point of liquor 23 per cent solids	1 deg. F.
Rise of boiling point of liquor 57 per cent solids	4 deg. F.
Flue gas temperature	500 deg. F.
Power necessary for screw presses and pumps for a production of 100 tons of pulp per day	225 h.p.

Performance of Pulping Units Per Ton of Pulp Produced

The performance expected from each unit in the process is as follows:

DIGESTER BLOW
2300 pounds solids derived from wood, sulphur and lime for each ton of pulp produced.
420 pounds solids derived from dilute effluent from second press used in acid system.

2720 pounds total solids per ton pulp.
15300 pounds water in liquor (under extreme condition of moisture in chips.)
2000 pounds pulp

FIRST SCREW PRESS
2175 pounds solids from above delivered to waste liquor storage dissolved in
12300 pounds water

SECOND SCREW PRESS
2000 pounds pulp from first press carrying
3000 pounds water and
545 pounds solids with
12300 pounds condensate from digester heat exchanger and heater on second effect thoroughly mixed on way to second press which delivered,
420 pounds solids dissolved in
12300 pounds water to acid system and 2000 pounds of pulp with
125 pounds solids dissolved in
3000 pounds water to wet machines or deckers
Removal of solids from spent liquor..... 94.6 per cent

Hourly Performance of Evaporator Units Per 100-Ton Sulphite Pulp Mill

On the basis of a 100 ton sulphite pulp mill producing 4.17 tons of pulp per hour the hourly performance of the subsequent heating, evaporating and burning equipment expected is as follows:

LIQUOR HEATER
Heat available in condensate from
Digester heat exchanger 20,850 (256-158) ..... 2,047,000 B.t.u.
Heater on second effect 23,600 (282-158)..... 2,927,000 B.t.u.
4,974,000 B.t.u.

60370 pounds liquor at 180 deg. F. containing
51300 pounds water and
9070 pounds solids require 6037 × .925 B.t.u. per degree rise in temp.

Temperature of liquor leaving heater— $\frac{4974000}{60370 \times .925} + 180 = 269$ deg. F.

SECOND EFFECT
Pressure in liquor and vapor space..... 55 pounds abs.
Pressure in steam space..... 80 pounds abs.
Temperature difference—312—(287 + 1)..... 24 deg. F.
60370 pounds liquor at 269 deg. F. fed, containing
51300 pounds water and
9070 pounds solids, 15 per cent.
Heat required to raise temperature to 288 deg. F.
60370 × 19 × .925..... 1,061,000 B.t.u.
Heat required to evaporate 20850 pounds steam
20,850 × 919..... 19,150,000 B.t.u.
Heat lost by radiation, gases, etc..... 1,040,000 B.t.u.
Total heat to be supplied..... 21,251,000 B.t.u.
Latent heat 23,600 pounds steam at 80 pounds abs. 21,251,000 B.t.u.

FIRST EFFECT
Pressure in liquor and vapor space..... 80 pounds abs.
Pressure in steam space..... 165 pounds abs.
Temperature difference—366—(312 + 4)..... 50 deg. F.
39520 pounds liquor at 288 deg. F. containing
30450 pounds water and
9070 pounds solids, 23 per cent.
Heat required to raise temperature to 316 deg. F.
39,520 × 28 × .885..... 958,000 B.t.u.
Heat required to evaporate 23,600 pounds steam
23600 × 900.3..... 21,251,000 B.t.u.
Heat lost by radiation, etc..... 1,400,000 B.t.u.
Total heat to be supplied..... 23,609,000 B.t.u.
Latent heat 27,560 pounds steam at 165 pounds abs. 23,609,000 B.t.u.

FURNACE UNDER THE BOILER
15920 pounds concentrated liquor containing
6850 pounds water and
9070 pounds solids, 57 per cent. Temperature 316 deg. F.
Factors for heat balance taken from Mr. Kimball's article.
Heat from burning 9070 pounds solids..... 72,560,000 B.t.u.
Heat in air for combustion..... 778,000 B.t.u.
73,338,000 B.t.u.
Heat lost from evaporating 6107 pounds water remaining after first flash—6107 × 970.4..... 5,923,000 B.t.u.
Heat lost from superheating 6850 pounds water vapor from 212 to 500 deg. F.—6850 × 288 × .469..... 925,000 B.t.u.
Flue gas losses from combustion of solids in liquor..... 14,180,000 B.t.u.
Loss in ash $\frac{1.5 \times 72,560,000}{100}$ ..... 1,088,000 B.t.u.
Loss from radiation..... 1,566,000 B.t.u.
Total losses..... 23,682,000 B.t.u.
Ratio of Loss $\frac{23,682,000 - 778,000}{72,560,000}$ ..... 31.6 per cent

STEAM BOILER
Heat supplied by furnace to water in boiler..... 49,656,000 B.t.u.
Heat necessary to furnish 27,560 pounds steam at 165 pounds abs. used for evaporation and cooking..... 23,609,000 B.t.u.
Heat available for other purposes..... 26,047,000 B.t.u.

Boiler capacity required for evaporation and cooking
$\frac{23,609,000}{970.4 \times 34.5}$ .....705 Boiler Horse Power
Boiler capacity available for other purposes
$\frac{26,047,000}{970.4 \times 34.5}$ ..... 777 Boiler Horse Power
Steam evaporated from and at 366 deg. F..... 27,560 pounds per hour
Steam evaporated from 212 deg. F. to 366 deg. F... 15,650 pounds per hour
Theoretical mechanical power available, exhausting steam for other purposes from steam turbine for drying pulp..... 1,000 Kw.

Discussion

The performance above is based upon operation with excessive moisture in the chips. Ordinarily there would not be sufficient water in the waste liquor, using the Paulson process, to furnish the steam needed for cooking. This deficiency can be met, however by taking whatever amount of effluent from the second screw press is required to maintain a proper balance.

At this day and age no mention need be made of the fact that acid resistance steel is used for the digester heat exchanger, the liquor heater and the tubes and exposed surfaces of the second effect. The first effect is made of ordinary steel and iron on account of the absence of acid conditions after the second effect.

The total power available namely, 1482 boiler horse power, is ample to supply all the needs of the pulp mill including the drying of the pulp. Auxiliary fuel is doubtless desirable but with coal costing $5.00 per ton delivered at the bunkers a saving of over $300.00 per day is indicated. In addition, by proper design of the furnace, much of the lime in the liquor may be recovered with the saving in proportion to the amount collected. Soda may be substituted as the base without adding materially to the cost of operation. Burning takes place under oxidizing conditions so that the fuel value of the liquor can be much more readily realized than in sulphate liquor recovery.

It is hardly necessary to comment that the Paulson process for spent sulphite liquor evaporation and combustion puts a different complexion on the entire waste liquor disposal problem. It no longer is a waste liquor but a possible source of revenue of such magnitude that very satisfactory returns are possible from the realization of its fuel value in every sulphite mill now operating without some means of utilization. Business conditions during the past five years have prevented the use of the process on a large scale but now, with definite revival of pulp demand and availability of capital, there is no adequate reason for further delay in the elimination of one of the greatest sources of waste in industrial activity.

Literature Cited

(1) *Tech. Assoc. Papers*, XVI, No. 1:198-200 (1933).
(2) U. S. Patent No. 1,393,241 (Oct. 11, 1921).
(3) *Tech. Assoc. Papers*, XVIII, No. 1:213-225 (1935).
(4) *Tech. Assoc. Papers*, XVIII, No. 1:545-548 (1935).

Pulpwood Exports To Germany May Decrease

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., November 5, 1935—Recent developments indicate that exports of pulpwood to Germany will experience a slump, owing to the German Government's policy of not freeing sufficient foreign exchange for payment of pulpwood imports, according to reports from B. Franklin Steiner, American Consul General at Prague. The margin of profit is gradually being absorbed by the loss in interest payments, storage charges and other risks. At the same time it will be difficult for the domestic market to take all the pulpwood offered, and it is feared that prices will be depressed. July prices of pulpwood for export remained at the same level as in June, namely, between 105 crowns and 110 crowns per cubic meter (approximately $9.95 to $11.25 per cord) f.o.b. Bohemian-Saxon frontier stations.

Pulp and Paper Industry Literature Review

Abstracts of Articles and Patents Compiled by the Abstracts and Bibliography Committee of the Technical Association of the Pulp and Paper Industry, A. Papineau-Couture, John F. Ohlson, C. E. Peterson and Clarence J. West, Chairman

Copies of United States Patents can be obtained from the United States Patent Office, Washington, D. C., for 10 cents each. Send currency, not stamps.

Raw Materials

Shrinking and Swelling of Wood. Alfred J. Stamm. Ind. Eng. Chem. 27; 401-406 (April, 1935).—Factors affecting the dimension changes of wood resulting from moisture content changes are discussed. A simple relationship is shown to exist between the shrinkage and the density of small specimens of wood dried under practically stress-free conditions, which indicates that the volumetric shrinkage is practically equal to the volume of water lost below the fiber-saturation point and that the change of fiber cavity dimensions is small. Deviations from this relationship caused by drying stresses are explained. Data for the swelling of wood in aqueous electrolyte solutions and in dry organic liquids are presented and considered from the standpoint of swelling theories. Data on the replacement of water in swollen wood by other liquids are presented. —A. P.-C.

Possibilities of Improving Pulping Characteristics of Pulpwoods by Controlled Hybridization of Forest Trees. Ernst J. Schreiner. Paper Trade J. 100, No. 8; 105-109 (Feb. 21, 1935).—The results obtained by Oxford Paper Co. in the popular breeding project fully supports the view that hybridization and selective breeding of forest trees will give results comparable to those realized in the development of the older crop plants.—A. P.-C.

Experiments in the Seasoning of Pulp Wood. R. T. Steedman, Pulp Paper Can. 36; 75-76 (Convention Issue, 1935).—Experiments carried out at the Smooth Rock Falls mill of Abitibi Power and Paper Co., on various phases of drying and seasoning balsam and spruce pulpwood indicated the effectiveness of tier piling in promoting the reduction of moisture content by air seasoning of peeled pulpwood logs, and showed that uneven moisture distribution is to be expected in river wood when taken directly from the river to the mill.—A. P.-C.

Determination of the Variability of Pulpwood as an Indication of Pulp Yield. J. D. Hale. Pulp Paper Can. 36; 120-122, 124 (Feb. 1935).—A brief description is given of the procedure being followed in an extensive investigation undertaken to determine the extent and the causes of variations in density of wood with particular reference to the variation in mean density of a species (spruce and balsam, respectively) in different localities, and to the range of variation of density within a species. Results obtained to date are briefly summarized.—A. P.-C.

Investigation Into Rate of Deterioration in Insect-Killed Spruce on the Gaspe Peninsula. C. G. Riley. Pulp Paper Can. 36; 130-132 (Feb. 1935)—A preliminary report describing the investigation being carried out to ascertain the length of time during which trees that have been killed by bark beetles and the spruce sawfly may be expected to remain sufficiently sound to render their salvage as pulpwood profitable. Laboratory tests indicated that sulphite pulp can be made from the decayed portion of insect-killed trees for at least up to 3 years after death.—A. P.-C.

Logging Jack Pine. W. A. Delahey Pulp Paper Can. 36; 123-124 (Feb., 1935).—A discussion of the characteristics of the species as they affect the cost of logging. —A. P.-C.

Chinese Reed and Its Pulp. T. Y. Tang and H. L. Wang. J. Chinese Chem. Soc. 2; 343-350 (1934).—Pulps prepared from the Chinese reeds, Lou, Wei and Ti, by means of caustic soda have copper numbers slightly greater than 3 and high ash content and ash alkalinity, but all these defects are adequately remedied by treating with caustic soda under pressure and then with acid. The hemicelluloses yield arabinose and xylose, but no glucose or mannose. The lignin (sulphuric acid method) and cellulose content of the pulps are about 23.7 to 25.7 and 43.1 to 44.5%, respectively. Pectin is absent.—A. P.-C.

Recovery of Flax, Hemp or Other Waste for Their Subsequent Conversion into Paper Pulp. V. Leconte-Brunel. Fr. pat. 775,208.—The waste is passed successively through a willow to remove dust, straw, etc., and through known bleaching, washing and drying equipment; then through carding and combing apparatus, and finally through a drum in which is mounted a rapidly rotating (about 200 r.p.m.) shaft to which are fixed a large number of radially projecting rods or bristles, which defiberize the material—A. P.-C.

Production of Bast Fibers for Paper Making. George A. Richter assignor to Brown Co. U. S. pat. 1,995,900 (March 26, 1935).—Stalks of plants such as ramie, hemp or flax are cut into suitable lengths (*e. g.*, about 0.5 to 1 in.), cooked by known processes, and the longer bast fiber portion of the resultant pulp is separated from the shorter pith fibers by means of a suitable apparatus such as described in Webber's U. S. pat. 1,786,973 of Dec. 30, 1930. —A. P.-C.

Production of Paper. Papierfabrik Spechthausen A. —G. Brit. pat. 419,874 (Nov. 20, 1934).—Waste from the wet-spinning of flax and hemp is made suitable for use in the manufacture of high-grade paper by mechanical treatment adapted to remove chaff. The treatment may comprise beating or tearing combined with suction.—A. P.-C.

Cellulose and Lignin

Refractive Power of Cellulose and Its Derivatives. I. Influence of Noncellulosic Impurities on Refractory of Cellulose Fibers. Kisou Kanamaru. Helv. Chim. Acta 17; 1047-1066 (1934).—Measurements of the refractive index, both parallel and perpendicular to the fiber axis, were made with ramie, hemp, jute, Manila hemp, straw and bamboo fibers, at each stage of a process of purification consisting of extraction by alcohol, ether, water and 1% caustic soda, and chlorination. The values of the refractive index parallel to the axis increased, and that perpendicular to the axis decreased, with purification of the latter converging to 1.524 at 21 degrees for all varieties, while the former varied with the material. Measurement of the double refraction can be used as a criterion of purity for a given variety of cellulose fiber.—A. P.-C.

Refractive Power of Cellulose and Its Derivatives. Influence of Oxidation and Hydrolysis on Refractivity of Cellulose Fibers. Kisou Kana Maru. Helv. Chim. Acta 17; 1066-1072 (1934).—Oxy- and hydro-cellulose behave similarly to ramie, hemp, etc., cellulose, in that with progressive degradation first the refractive index parallel to the fiber axis and later that perpendicular to the axis increases. Only the former reaches the value characteristic of the cellulose micelle. This indicates that the refractive index parallel to the axis may depend on the configuration of the main chain, the index perpendicular to the axis being influenced by chemical changes in the side chains.—A. P.-C.

The Refractory Power of Cellulose and Its Derivatives. III. The Influence of Adsorbed Water on the Refractory Power of Cellulose Fibers. Kisou Kanamaru. Helv. Chim. Acta 17; 1425-1429 (1934).—The double refraction of ramie fibers is a function of their water content. With increasing water content the refractive index perpendicular to the fiber axis remains almost constant, while the index parallel to the axis decreases to a minimum and then increases.—A. P.-C.

X-Ray Analysis of Textile Fibers. III. Structure of the Cellulose Crystallite As Interpreted From X-Ray Diffraction Data. Wayne A. Sisson Textile Research 5; 119-133 (1933).—The x-ray data which have been of major importance in supporting the micellar theory are enumerated and the various possible ways of interpreting the data are reviewed briefly and compared. Bibliography of 47 references.—A. P.-C.

Adsorption of Caustic Soda by Cellulose. Wilder D. Bancroft and John B. Calkin. J. Phys. Chem. 39; 1-9 (1935).—Adsorption of caustic soda and of water by standard cotton can be determined by centrifuging the wetted cotton, and determining the point at which all the mother liquor has been removed. The "true" adsorption curve of caustic soda by cellulose is smooth and there is no indication of stoichiometric compound formation (in any large amount) over a range of varying caustic soda concentrations up to 20%. The authors take issue with previous investigators, especially Vieweg. Excepting dilution caustic soda solutions, the apparent adsorption is a partially irreversible process due to an irreversible change in the space lattice, and to swelling which can be more or less completely reversed at 105°C.—A. P.-C.

Adsorption Compression of Cellulose and Wood. I. Density Measurements in Benzine. Alfred J. Stamm and R. M. Seborg. J. Phys. Chem. 39; 133-142 (1935).—The apparent adsorption compressions of water *(C)* in benzene for Sitka spruce, white spruce, sulphite pulps (unbeaten and highly beaten) and cotton were determined. The effect of small variations in the true density of the adsorbent material are shown, and it is evident that *C* is of the order of a few thousand rather than 100,000 atmospheres. Actual adsorption compression values can be obtained by the Stamm and Seborg method at higher moisture contents, and the adsorption compression extends to the fiber-saturation point—A.P.-C.

The Cellulose of Marine Algae. Thomas Dillon and Tadhg O'Tuama. Sci. Proc. Roy. Dublin Soc. 21: 147-152 (1935).—Cellulose was prepared from *Laminaria digitata* after retting by boiling in dilute hydrochloric for 1 hr., washing and boiling with 9 percent caustic soda solution for 1 hr. The treatment with caustic soda was performed 3 times, after which the material was bleached with chlorine. After boiling again with caustic soda and washing with water, alcohol and ether, the cellulose was obtained as a grayish powder. It was methylated by Urban's method and acetylated by Heuser's method. Viscose was made by the method of Cross, Beven and Beadle. After hydrolyzing by Ost's method the glucosazone obtained showed that the only product of complete hydrolysis was glucose.—A.P.-C.

Cellulose and Lignin

The Determination of Lignin. I. Errors Introduced By the Presence of Certain Carbohydrates. Arthur G. Normand and Samuel H. Jenkins. Biochem J. 28: 2147-2159 (1934).—Fructose, exylose, arabinose and polysaccharides give an insoluble solid residue on standing in 72 percent sulphuric acid, and therefore interfere with the lignin determination. The length of treatment with 72 percent sulphuric acid should therefore be cut to 2 hrs. Figures generally quoted for lignin are in most cases high owing to the presence of xylose.—A.P.-C.

The Determination of Lignin. II. Errors Introduced By the Presence of Proteins. Arthur G. Norman and Samuel H. Jenkins. Biochem. J. 28: 2160-2168 (1934).—Proteins when added to plant materials interfere with the lignin determination; the precipitate obtained after treatment with 72 percent sulphuric acid contains nitrogen. Hydrolyzed proteins give greater precipitates than the unhydrolyzed. Pre-treatment with acid generally lowers the error.—A.P.-C.

Chemistry of Jute Lignin. V. Chlorination of Lignin. Pulin B. Sarkar. J. Indian Chem. Soc. 11: 777-785 (1934).—Dry chlorine acts very slowly on dry jute to form chlorolignin containing the same percentage of chlorine as when treated with moist chlorine. The effect of pretreatment with boiling 1 percent caustic potash on chlorination appears to be more physical than chemical. Light has no influence on the chlorination. In the presence of iodine, ferric chloride or antimony trichloride the maximum chlorine content was 17.7 percent. When lignin is chlorinated in the presence of methanol, methylation and chlorination occur. By careful chlorination of finely powdered lignin for 4 hours a compound containing 25.8 percent chlorine is always formed. The chlorine content falls to 17.7 percent when chlorolignin is treated with dilute caustic soda. Estimation of the chlorine in combination as hydrochloric acid showed that lignin-hydrochloride contained no double bonds. Chlorolignins from jute and separated lignin are almost identical. Chlorolignin boiled with 12 percent hydrochloric acid gives carbon dioxide even in an atmosphere of hydrogen. The methylenedioxy and methoxy groups are partially lost during chlorination. By acid or alkaline distillation of chlorolignin, a product which forms iodoform with iodine and alkali is formed. The mechanism of chlorination is explained, a molecular weight of 816 being assumed for lignin.—A.P.-C.

Mechanical Process

Comments on Groundwood Mill Practice in America. W. E. Brawn. Paper Trade J. 100, No. 16: 40-42 (April 18, 1935).—A review of current mechanical pulping practice covering grinders, pulpstones, pulpwood, labor, and supervision and a summary of a survey made by the TAPPI Mechanical Pulping Committee to observe the range of equipment and variety of products of the industry.—A.P.-C.

Commercial Operation of a Pulpwood Grinder At High Surface Speeds. H. B. McAdam. Pulp Paper Can. 36: 77-81 (Convention Issue, 1935).—Mill-scale tests showed that it is practical to produce news grade groundwood at stone speeds of 5415 ft. per min. (artificial carborundum stone) to 6032 ft. per min. (Norton stone), permitting of increasing the grinder unit production by 50 percent.—A.P.-C.

European Groundwood Mill Pactice. Bernard Bronstein. Paper Trade J. 100, No. 9:39-40 (Feb. 28, 1935).—

An outline of present-day practice in Scandinavian groundwood mills.—A.P.-C.

The Use of White Water in the Newsprint Mill. R. W. Sterns. Pulp Paper Can. 36: 73-74 (Convention Issue, 1935).—A brief discussion of the possibility of reducing fiber waste in newsprint mills by either reducing the fiber content of the white water vented, or reducing the amount of fresh water added and correspondingly reducing the amount of white water discharged from the system. While the latter method at first sight appears to be the simpler, there are numerous complicating factors which doubtless accounts for the greater popularity of the first method.—A.P.-C.

Alkaline Processes

Straw Pulp. Papyro. Papeterie 57: 249-253 (March 25, 1935).—A practical discussion of the advantages of straw pulp, drawing attention particularly to the means of obtaining best yields and most advantageous cost price for a high grade product.—A.P.-C.

Evaluation of the Heat Imput Into Alkaline Pulping Digesters. Harold R. Murdock. Paper Trade J. 100, No. 14: 41-42 (April 4, 1935).—From the replies to a questionnaire sent to U. S. and Canadian alkaline pulp mills an average digestion condition was worked out, and from this a standard was determined for calculating the amount of heat required for any digester operation.—A.P.-C.

The Distribution of Sulphur During the Kraft Pulping Operation. Otto Kress and James W. McIntyre. Paper Trade J. 100, No. 18:43-46 (May 2, 1935).—A study of the sulphur balance during kraft cooks and of the methods used for the determination of sulphide in black liquor and of the variation of the sulphide in the liquor during the cook.—A.P.-C.

Combined Process for the Manufacture of Wood Pulp and of Straw Pulp. Georges Dupont and Jean de Fayad. Papier 38: 131-136 (Feb. 1935); Mon. Papeterie Belge 15: 173-174 (March, 1935).—Black liquors rich in sodium lignates, obtained in the pulping of wood by the soda or sulphate process, are used as solvents for the incrusting substances in the production of pulping from pectocellulosic material such as esparto, ramie, hemp, flax, bamboo, and various straws. —A.P.-C.

Manufacture of Alpha-Cellulose. Jose Sala Pou. U. S. pat. 1,997,153 (April 9, 1935).—Bamboo is cut and dried in the open air for 40 days. The cut and dried bamboo is exposed to the action of running water in a river for 7 to 15 days and ground to form a kind of tow. This is boiled for 2 to 3 hrs. at a pressure of 0.5 to 1 atmosphere in an autoclave with a circulating liquor containing alkaline hydroxides together with 1.5 to 2 percent of a reducing agent (*e.g.*, alkali sulphite). After washing with hot and cold water, the material is cooked for 1 hr. at 156°C. and 4.8 atmospheres pressure and then for 2 to 3 hrs. at 143°C. and 3 atmospheres, with a liquor containing alkali hydroxide, sodium sulphide, sodium sulphite and guaiacol. The cooked material is washed with water emulsified with benzol and then with cold water, diluted, bleached with sodium hyprochlorite, washed, treated with hydrofluoric acid solution, washed, thickened, heated with sodium sulphite at 60°C. under a pressure of 2 atmospheres, and finally bleached with sodium peroxide or hydrogen peroxide.—A.P.-C.

Miscellaneous

The Groedel Method. E. Belani. Pappers-Travarutid. Finland 16, No. 24:1020, 1023 (Dec. 31, 1934).—A new system for logging pulp wood is described, the so-called Groedel method developed in Poland. It is claimed this new method combines the advantages of summer and winter cutting without involving their disadvantages. The standing pulp wood is "ringed" at the end of June, *i.e.*, the bark and bast are removed in the form of a ring approximately 10 cm. wide in the place where the tree is to be cut later in the season. This ring stops the sap circulation and causes the wood to dry out. The tree is felled in November; the wood is then about 25-30 + lighter in weight on account of the artificial drying process, it is of excellent white quality and does not show any discolorations. In order to prevent serious forest damages, however, it is essential that ringed wood is cut before the flying period of the bark beetle in the following spring.—C. J. W.

Water Resistance of Pressed Wood Fiber. B. T. Iv. Lesokhimicheskaya Prom. 3, No. 7:14-21 (1934); C. A. 29:1982.—Treatment with dilute sulphuric acid solutions causes considerable shrinkage due to gelatination and decrease the elasticity as well as the surface tension of the fibrous pulp elements. This permits a compacting of the fibers and their partial consolidation. The effect of water resistance of pressed pulp is attained where the elasticity is at a minimum and there is a maximum reorientation of the structural elements, which cause the plastic deformation. Such a product loses its ability for reverse deformation and it swells only in accordance with the specific gravity it has acquired. The water resistance may possibly be due to saturation of the free hydroxyl groups. One of the proper treating methods is the preliminary impregnation with sulphates of copper or a mixed sulphate, as well as with copper sulphate and aniline derivatives.—C. J. W.

Thermal Treatment in the Preparation of Pressed Wood Pulp. B. T. Iv. and P. A. Issinskii. Lesokhimicheskaya Prom. 3, No. 1-2:15-23 (1934); C. A. 29:1982.—Wood pulp from red oak, white ash, beech, pine and aspen was used. Pine is most, and aspen least resistant to heat. Heating for 2 hours at 150° C. carried out with dry pulp and up to 200° C. with moist pulp (up to 20 per cent water) does not effect any serious changes in its chemical composition and therefore this temperature can be used in the plasticization process. Moisture retards the decomposition of the pulp and the observations of Campbell and Taylor on a catalytic action of the water on the pulp were not corroborated. The following changes in the composition of the pulp were observed by the authors, as well as by foreign investigators: Heating to 150° C. causes the splitting of the associated pentosans, while changes in the other components are insignificant. At 150-160° C., a rapid decomposition of the carbohydrates takes place with the formation of a great variety of intermediate products, which are soluble in benzene-alcohol mixture and in 1 per cent sodium hydroxide. The formation of lignin-like products in this stage is comparatively slow. At 200-250° C. the decomposition of carbohydrates is slightly retarded. A sharp differentiation of the intermediate carbohydrate decomposition products takes place, some of which are further decomposed into volatile substances (rapid loss in the weight of the pulp), while the others are condensed to a high-molecular lignin-like substance (rapid increase of lignins at this stage and decrease in substances soluble in 1 per cent sodium hydroxide).—C. J. W.

Report of the General Meeting of the German Association of Pulp and Paper Chemists and Engineers, held in Berlin, December 6-8, 1934. Wochbl. Papierfabr. 65, No. 50: 881-86; No. 51: 900-901 (Dec. 15, 22, 1934). Papier-Fabr. 32, No. 50: 513-20; No. 51/52: 523-28 (Dec.

16, 23, 1934). White water utilization was discussed; if the concentration is very heavy, a filter is recommended, otherwise a settling system. Paper sizing, the dispersion of rosin without alkali; paper testing, and new additions or improvements on the paper machine were discussed. By the aid of fluorescent light, bleached sulphite and bleached sulphate can be distinguished. The specific gravity of German spruce averages 0.45 from investigations on 12,000 samples. A paper by Emde, "Resinic acids of spruce wood and its action during the manufacture of sulphite pulp," showed that there were no resinic acids in the waste liquor, and that oxydation and isomerism continue during the cooking process. "Concerning the influence of the wood properties on the yield and quality of sulphite and sulphate pulps" is the title of a paper by Hagglund. The many properties of the wood are tabulated, and results showed that the fast growing wood gave more short and broad fibers, old trees gave longer and thinner fibers than young trees. Brecht read a paper entitled "Working with an experimental pulp grinder" and arrived at several conclusions as to the most satisfactory method of operation, hot grinding gave the better stock, production increases with speed but not in the same ratio. "Concerning the question of pulp wood" and "Concerning the production of heavy kraft paper for corrugated cartons" were the last two papers read. They are mostly of statistical nature.—J. F. O.

Chemical Physical Mill Control in Pulp and Paper Mills. P. Krais. Wochbl. Papierfabr. 65, Special Number: 11-12 (1934). Short description of what mill control should accomplish.—J. F. O.

The Historical Importance of the Swabian Paper Production. Viktor Thiel, Wochbl. Papierfabr. 65, Special Number: 47-51 (1934). An interesting narrative of early paper manufacture.—J. F. O.

Process for the Protective Treatment of Commercial Woods, Especially for the Prevention of Blue Fungus. Stockholms Superfosfat Fabriks, A. Bo. Stockholm. Finn. pat. 15,919 (Dec. 28, 1931). The commercial woods are subjected to a relatively short treatment with an aqueous solution of an antiseptic. This treatment is carried out preferably on the surface by spraying, submerging or coating. The alakli salt of boric acid such as sodium tetraborate or sodium meta borate; as well as chlorphenols such as chlor meta cresol, are used.—J. F. O.

Process for the Prevention of Fungus Growth on Ground Wood and Pulp. Kymmene A. Bol., Kuusankoski. Finn. pat. 15,828 (April 5, 1933). The pH value of the stock is brought to about 6.8 by means of organic or inorganic bases or basic reacting salts. The treatment may be through and through or only on the surface. Materials acting as a buffer may also be added, such as borax, alkali phosphate, alkali citrate, etc.—J. F. O.

Preparation of Cellulose. Hedwig Busch, assignor to Zellstofffabrik Waldhof. U. S. pat. 1,991,786 (Feb. 19 1935).—A pulp containing about 97 per cent alpha-cellulose is obtained by boiling bleached or unbleached wood pulp for 1.5 hours under a pressure of 2 atmospheres with a solution of 0.8 per cent caustic soda and 0.8 per cent sodium sulphite. The resultant product yields practically colorless solutions and plastics that do not become discolored on standing.—A.P.-C.

Method and Means of Mechanically Separating Slimy Substances from Fiber Stock. Richard T. Lang and William Thaler, assignors to American Voith Contact Co., Inc. U. S. pat. 1,990,992 (Feb. 12, 1935).—The stock is passed through a stationary, horizontal drum covered with a wire screen of sufficiently fine mesh to prevent substantially all the fiber from passing through it. In its passage through the drum the stock is subjected to intensive washing created by pulsating action (produced by "whipper plates" which rotate very close to the inside surface of the drum) and powerful water showers, thereby separating slimy substances such as gums, resins, etc., from the fiber.—A.P.-C.

Optical Studies of Pulps. (Influence of Beating, Fillers, Cooking and Calendering). Study No. 3. Concerning the Relation Between the Degree of Cooking of the Pulp and Its Optical Properties. Hans Ress. Papier-Fabr. 32, No. 42; 438-40; No. 43: 443-46; No. 44: 450-55 (Oct.21-Nov. 4, 1934).—Increasing the degree of cooking, increases the brightness which is a function of the decrease in lignin content. The transparency changes only slightly with changes in the degree of cooking. When pulp is exposed to the ultra-violet light from a quartz lamp, the violet fluorescent color brightens with an increase in degree of cooking. All details of the experiments are given in full; the work being divided into the following headings, general, preparation of the samples, determination of the degree of cooking, results of the experiments and their evaluation and general observations are the results.—J. F. O.

Optical Studies of Pulps. (Influence of Beating, Fillers, Cooking and Calendering). Study No. 4. Concerning the Influence of Calendering on the Optical Properties of Paper. Hans Ress. Papier-Fabr. 32, No. 49: 491-500 (Dec. 9, 1934).—By means of numerous curves the author discusses the following; the difference in gloss between the top and wire side and between the machine direction and cross direction, the relation of gloss to finish, and the relation of brightness to finish. Machine direction shows a higher gloss than cross direction. In calendering paper, a point is reached called "gloss saturation" where further calendering does not increase the gloss. A machine finished paper is brighter than a calendered and the more calendering the paper gets, the lower the brightness. If the paper is unsized, uncolored and most important devoid of filler, a coarser paper gives a higher brightness than a smoother finish. By using fillers with a high index of refraction, the loss in opacity upon calendering is less.—J. F. O.

Concerning the Knowledge of the Absorbtivity of Pulps. August Noll and Fritz Boltz. Papier-Fabr. 32, No. 46: 465-70; No. 47: 473-76 (Nov. 18, 25, 1934).—The articles discuss the absorbtivity of pulps in hydrophile and hydrophobe liquids, in colored solutions, salt solutions and acids. The absorbtivity as a function of the viscosity of the liquid being absorbed; the relation between the absorbtivity and the moisture content of the pulp as well as the reaction between the absorbtivity and the amount of parchmentizing were described with the aid of much data. The methods for the evaluation of the data and description of a standardized apparatus are included.—J. F. O.

The Influence of Hardness on the Use of Make-Up Water. Konrad Weiss. Zellstoff U. Papier, 15, No. 1: 11-14 (January, 1935).—Calculations of the hardness and cost of treatment for water softened by the lime soda process together with a final treatment with phosphate. J. F. O.

The Burning of a Poor Grade of Fine Coal in the Recent Boiler Installations with a Special Type Grate. Reinhard Schulze. Wochbl. Papierfabr. 65, Special number: 29-37 (1934).—By installing a special type grate, the poorer grade of fine coal can be burned economically and without more difficulty than with ordinary grades of coal. Many charts and drawings accompanies the article.—J.F.O.

IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING NOVEMBER 2, 1935

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R. J. Reynolds Tobacco Co., Pr. Roosevelt, Havre, 62 cs.; P. J. Schweitzer, Exeter, Marseilles, 2 cs.; H. H. Strauss, Lafayette, Havre, 161 cs.; Champagne Paper Corp., Lafayette, Havre, 660 cs.; R. J. Reynolds Tobacco Co., Manhattan, Havre, 100 cs.; De Manduit Paper Corp., Manhattan, Havre, 175 cs.; Standard Products Corp., Manhattan, Havre, 7 cs.

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W. H. S. Lloyd & Co., Georgic, London, 4 cs., 1 ble.; S. K. Lonegren, Gripsholm, Gothenburg, 26 bxs.; Titan Shipping Co., Stavangerfjord, Oslo, 1 cs.; F. Blank, Manhattan, Havre, 9 cs.; ———, New York, Bremen, 1 cs.

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Jay Madden Corp., Pr. Roosevelt, Hamburg, 146 rolls; Parsons & Whittemore, Inc., Gripsholm, Gothenburg, 335 rolls; Bank of Montreal, Cornerbrook, Cornerbrook, 1,831 rolls; Parsons & Whittemore, Inc., Stavangerfjord, Oslo, 37 rolls; ———, Stavangerfjord, Oslo, 112 bls., 472 rolls; Jay Madden Corp., Manhattan, Hamburg, 134 rolls; Jay Madden Corp., New York, Bremen, 401 rolls; Perkins Goodwin & Co., New York, Hamburg, 93 rolls; ———, Stavangerfjord, Oslo, 82 bls. (colored).

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Blauvert Wiley Paper Manfg. Co., Gripsholm, Gothenburg, 169 rolls; National Pulp & Paper Co. Inc., Gripsholm, Gothenburg, 982 rolls; Chase National Bank, Gripsholm, Gothenburg, 80 bls.. 6 rolls; Irvington Varnish & Insulator Co., Transylvania, Glasgow, 12 bls.; Yardley & Co., Berengaria, Southampton, 9 cs.; Scharf Bros., Black Hawk, Rotterdam, 7 cs.; M. M. Cohen, Manhattan, Hamburg, 77 bls., 314 rolls.

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RAGS, BAGGINGS, ETC.

Chase National Bank, Pr. Roosevelt, Hamburg, 70 bls. bagging; Amtorg Trading Corp., Bela Khun, Leningrad, 1,532 bls. rags; E. J. Keller Co. Inc., Gitano, ———, 162 bls. rags; Chase National Bank, J. Jadot, Antwerp, 52 bls. rags; ———, Hokuroku Maru, Osaka, 100 bls. cotton waste; ———, Hokuroku Maru, Osaka, 50 bls. rags; Manufacturers Trust Co., American Trader, London, 40 bls. rags; Van Oppen & Co., Tonsbergfjord, Barcelona, 105 bls. bagging; Chase National Bank, Tonsbergfjord, Barcelona, 206 bls. rags; Chase National Bank, Tonsbergfjord, Barcelona, 47 bls. cotton waste; ———, Tonsbergfjord, Barcelona, 116 bls. bagging; Bank of N. Y. Trust Co., Tonsbergfjord, Valencia, 116 bls. rags; E. J. Keller Co. Inc., Tonsbergfjord, ———, 184 bls. bagging; ———, Ida, Sfax, 238 bls. bagging; American Manfg. Co., Samaria, Liverpool, 8 bls. bagging; E. J. Keller Co. Inc., Maasdam, ———, 41 bls. paper stock; E. J. Keller Co. Inc., Maasdam, ———, 57 bls. bagging; E. J. Keller Co. Inc., Waukegan, ———, 108 bls. paper stock; Darmstadt Scott & Courtney, New York, Bremen, 74 bls. paper stock.

HIDE CUTTINGS

Great Eastern Packing & Paperstock Corp., Samaria, Liverpool, 77 bags.

OLD ROPE

———, Gitano, Hull, 292 coils.

CHINA CLAY

Orbis Products Trading Co., Samaria, Liverpool, 224 bags; English China Clays Sales Corp., Samaria, Liverpool, 134 bags.

WOOD PULP

———, Pr. Roosevelt, Hamburg, 172 bls. wood pulp, 18 tons; Price & Pierce, Ltd., Gripsholm, Gothenburg, 125 bls. sulphite; Perkins Goodwin & Co., Gripsholm, Gothenburg, 166 bls. sulphate; D. M. Hicks Inc., Gripsholm, Gothenburg, 360 bls. sulphite; J. Andersen & Co., Gripsholm, Gothenburg, 375 bls. sulphite; Price & Pierce, Ltd., Wanja, Orviken, 150 bls. chemical pulp, 25 tons; Price & Pierce, Ltd., Wanja, Hernosand, 300 bls. sulphite, 50 tons; Price & Pierce, Ltd., Wanja, Hernosand, 10,800 bls. sulphate, 1,828 tons; ———, Wanja, Horneborg, 153 bls. chemical pulp; ———, Black Hawk, Rotterdam, 750 bls. wood pulp, 150 tons; ———, Stavangerfjord, Sarpsborg, 150 bls. sulphite; M. Sone, Stavangerfjord, Oslo, 300 bls. mechanical pulp; Bulkley Dunton & Co., Belos, ———, 5,000 bls. sulphate, 1,00 tons; Johaneson Wales & Sparre, Inc., Belos, Sundsvall, 300 bls. sulphate, 50 tons; ———, Belos, Hernosand, 6,000 bls. sulphate, 1,000 tons; ———, Manhattan, Hamburg, 100 bls. wood pulp, 10 tons; M. Sone, Manhattan, Hamburg, 500 bls. wood pulp, 77 tons; Castle & Overton, Inc., New York, 1,130 bls. wood pulp, 226 tons.

WOOD PULP BOARDS

Fibre Case & Novelty Co., Gripsholm, Gothenburg, 8 bls.; H. Fuchs & Co., Gripsholm, Gothenburg, 25 crates.

ALBANY IMPORTS

WEEK ENDING NOVEMBER 2, 1935

International Paper Co., Annavore, Newcastle, N. B., 2,250 cords pulpwood; Gottesman & Co. Inc., Danwood, Sweden, 4,300 bls. wood pulp; Bulkley Dunton & Co., Danwood, ———, 2,250 bls. wood pulp.

PORTLAND IMPORTS

WEEK ENDING NOVEMBER 2, 1935

J. Andersen & Co., Belos, Sundsvall, 6,600 bls. sulphate, 1,100 tons; J. Andersen & Co., Belos, Stugsund, 1,950 bls. sulphate, 390 tons.

BOSTON IMPORTS

WEEK ENDING NOVEMBER 2, 1935

———, Samaria, Liverpool, 634 bags hide cuttings; G. F. Malcolm, Inc., Samaria, Liverpool, 5 cs. tissue paper; Johaneson Wales & Sparre, Inc., Belos, Sundsvall, 300 bls. knotter pulp, 50 tons; Perkins Goodwin & Co., Belos, Sundsvall, 1,200 bls. sulphate, 200 tons; Perkins Goodwin & Co., Belos, Sundsvall, 750 bls. sulphite, 150 tons; Mead Sales Co., Belos, Stugsund, 250 bls. sulphite, 50 tons; Bulkley Dunton & Co., Belos, ———, 1,500 bls. sulphite, 300 tons; M. Sone, Minsterwald, Hamburg, 324 bls. wood pulp; Parsons & Whittemore, Inc., Minsterwald, ———, 1,000 bls. wood pulp; Bulkley Dunton & Co., Minsterwald, ———, 300 bls. wood pulp; E. J. Keller Co. Inc., Black Eagle, ———, 30 lbs. bagging.

PHILADELPHIA IMPORTS

WEEK ENDING NOVEMBER 2, 1935

E. J. Keller Co. Inc., Examelia, ———, 155 bls. paper stock.

WILMINGTON IMPORTS

WEEK ENDING NOVEMBER 2, 1935

Price & Pierce, Ltd., Wanja, Orviken, 3,900 bls. chemical pulp, 660 tons; E. M. Sergeant Pulp & Chemical Co., Wanja, Hernosand, 3,000 bls. sulphite, 508 tons; ———, Wanja, Kopmanholmen, 1,224 bls. chemical pulp.

BALTIMORE IMPORTS

WEEK ENDING NOVEMBER 2, 1935

Castle & Overton, Inc., Black, Rotterdam, 325 bls. wood pulp, 65 tons; ———, Black, Rotterdam, 300 bdls. wood pulp boards; Parsons & Whittemore, Inc., City of Hamburg, ———, 500 bls. wood pulp; Parsons & Whittemore, Inc., City of Baltimore, ——— 515 bls. wood pulp; Gottesman & Co. Inc., Gonzenheim, Sweden, 1,600 bls. wood pulp; Bulkley Dunton & Co., Gonzenheim, ———, 4,200 bls. wood pulp; Bulkley Dunton & Co., City of Hamburg, ———, 700 bls. wood pulp; Bulkley Dunton & Co., Vigor, ———, 3,625 bls. wood pulp.

NEWPORT NEWS IMPORTS

WEEK ENDING NOVEMBER 2, 1935

Bank of Montreal, Cornerbrook, Cornerbrook, 4,787 rolls newsprint; Gottesman & Co. Inc., Gonzenheim, Sweden, 500 bls. wood pulp; Bulkley Dunton & Co., Greisheim, ———, 9,750 bls. wood pulp.

TAMPA IMPORTS

WEEK ENDING NOVEMBER 2, 1935

Bank of Montreal, Cornerbrook, Cornerbrook, 5,475 rolls newsprint.

NORFOLK IMPORTS

WEEK ENDING NOVEMBER 2, 1935

Chase National Bank, Black Hawk, Rotterdam, 157 bls. bagging.

MONTREAL IMPORTS

WEEK ENDING NOVEMBER 2, 1935

Gottesman & Co. Inc., Norefjord, Sweden, 8,100 bls. wood pulp; Gottesman & Co. Inc., Koln, Czecho-Slovakia, 709 bls. wood pulp.

New York Market Review

Office of the PAPER TRADE JOURNAL, *Wednesday, November 6, 1935*

Conditions in the local paper market are satisfactory. Demand for the various standard grades of paper continues persistent and the movement into consumption is well up to average for the time of year. Sales forces of the leading paper organizations are optimistic. Prices are holding to formerly quoted levels.

The position of the newsprint paper market is practically unchanged. Considerable opposition is developing against the proposed sale of the assets of the Great Lakes Pulp and Paper Company to a group of United States newspaper publishers. No further developments have transpired in the price situation.

Steadiness prevails in the fine paper market. Demand for book, cover, writing and ledger papers is well sustained. Prices are firm. The coarse paper market is fairly active, with kraft wrapping paper moving in good volume. Tissues are in seasonal request. The paper board market is sharing the general improvement.

Mechanical Pulp

The ground wool pulp market is slightly firmer. Manufacturing operations in the United States, Canada and abroad are proceeding in sufficient volume to take care of current requirements. Accumulations at the mills are not excessive. Prices are holding to previously quoted levels, without difficulty.

Chemical Pulp

Demand for the various grades of domestic and foreign chemical pulp is fairly brisk. With offerings limited, kraft pulp is particularly strong, and is now quoted at from $1.80 to $1.85, on dock, Atlantic ports. Bleached and easy bleaching sulphite pulps are also holding up well.

Old Rope and Bagging

The old rope market is rather listless. Paper mill demand for domestic and imported old manila rope is restricted. Mixed strings are only moderately active. On the other hand, the bagging market is decidedly firmer. Prices of gunny and scrap bagging have advanced. Roofing bagging continues steady.

Rags

Trading in the domestic rag market is fairly active. Both new and old rags are in better request. No. 1 white shirt cuttings are moving freely and are in demand for export. Foreign interests are also displaying interest in several other grades. Roofing rags are exhibiting a strong undertone.

Waste Paper

The paper stock market is in a stronger position, due to the strike of employees in packing plants. Board mill demand for the lower grades is better than of late and there is some talk around of higher prices in the near future. The higher grades of waste paper continue steady, with prices unchanged.

Twine

Business in the twine market is expanding with the approach of the Yuletide holidays and demand for the various varieties should continue heavy until the end of the year. The recently advanced quotations on hard and soft fiber twines are being maintained.

Indianapolis Demand Satisfactory

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., November 4, 1935.—Paper demand in this territory has shown a satisfactory volume during the last week with every indication of added business as the Holiday season approaches. Local printers report a lot of inquiries for direct by mail material. Most of the local shops have more business on hand now than they have had any fall for the last six. And inquiries show that more business is on the way. The demand for fine paper continues to expand slowly. Prices are held firm. Books and covers are moving in a steady volume and the market undertone is reported to be very satisfactory, with added business expected before the end of the month.

Newsprint demand continues good. The papers in industrial cities report an increased volume of advertising. The agricultural communities have been in good shape for some time and publishers in these sections report considerably more lineage than they had a year ago. Local jobbers are preparing for some contract business before the first of the year. It is believed contracts will come a little easier this year than last when the buyers were uncertain about market conditions. Salesmen report that prospective buyers are becoming convinced there will be no radical changes in the newsprint market.

A good demand continues for tissues. Wrapping paper and bags also are going over well. Prices on all lines of common paper are being well maintained and credit conditions are reported the best for many months. There has been an increase in sale of shopping bags in this territory and officials of one of the largest plants of this kind in the country report the outlook exceptionally bright.

Demand for boxes of all sorts is slowly improving. There was a lull during the late summer, but with the change of seasons and the approach of the Christmas holiday, demand has picked up nicely. Textiles and candy plants have expanded their demand. There also is a good sale to makers of automobile accessories and the hardware lines.

Paper stock men are somewhat encouraged with the increasing demand from mills. Prices are firm.

Seibert To Continue M. & O. Lines

The Minnesota and Ontario Paper Company announces that the Seibert Paper Company, 205 West Wacker Drive, Chicago, will continue to handle the sales of all its kraft and sulphite wrapping paper products. The announcements made by the company as of October 1 referred to changes in organization and sales of printing papers only.

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, November 6, 1935.

BLANC FIXE.—Steadiness prevails in the blanc fixe market. Prices are holding to previously quoted levels. The pulp is selling at from $42.50 to $45 per ton, in bulk; while the powder is offered at from 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER.—The position of the bleaching powder market is practically unchanged. Contract shipments are moving in good volume. Prices are steady and shading infrequent. Bleaching powder is quoted at from $1.90 to $2.15 per 100 pounds, in drums, at works.

CASEIN.—The casein market is firm. Domestic standard ground is quoted at 13½ and finely ground at 14; French standard ground at 14 and finely ground at 14½; Argentine standard ground at 13¾ and finely ground at 14¼ cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—Demand for caustic soda is fairly persistent. The contract movement is well up to average. Prices are steady. Solid caustic soda is quoted at from $2.60 to $3.10; while the flake and ground are selling at from $3 to $3.05 per 100 pounds, at works.

CHINA CLAY.—The china clay market is exhibiting a strong undertone. Prices are holding to schedule. Imported china clay is quoted at from $13.50 to $21 per ton, ship side; while domestic paper making clay is selling at from $6.50 to $12 per ton, at mine.

CHLORINE.—The chlorine market is displaying strength. Shipments against contract are moving in fairly heavy volume. Prices remain unchanged. Chlorine is quoted at from $2 to $2.40 per 100 pounds, in tanks, or multi-unit cars, in ton lots, or over, at works.

ROSIN.—The rosin market is softer. Paper making gum rosin is now quoted at from $4.65 and wood rosin at $4.75 per 280 pounds, gross weight, in barrels, at Savannah. Seventy per cent rosin size is selling at $2.57½ per 100 pounds, in tank cars, at works.

SALT CAKE.—Paper mill demand for salt cake is brisk. The contract movement is regular. Salt cake is still quoted at from $12 to $13; and chrome salt cake at from $11 to $12 per ton, at works. Imported salt cake is selling at from $12 to $13 per ton, ship side.

SODA ASH.—The soda ash market is fairly buoyant. Shipments against contract are moving freely. Prices are holding to schedule. Quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $1.05; in bags, $1.20; and in barrels, $1.50.

STARCH.—Conditions in the starch market are fairly satisfactory. The contract movement is normal for the season. Special paper making starch is still quoted at $3.59 per 100 pounds, in bags; and at $3.86 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA.—The sulphate of alumina market is showing signs of improvement. Prices remain unchanged. Commercial grades are quoted at from $1.35 to $1.50; while iron free is selling at from $1.90 to $2.05 per 100 pounds, in barrels, at works.

SULPHUR.—The suphur market continues steady. Sulphur is quoted at $18 per long ton, on orders of 1,000 tons, or over, on yearly contracts; and at $20 per ton on any smaller quantity over that period. On spot and nearby car loads, the quotation is $21 per ton.

TALC.—Most of the business transacted in the talc market during the past week was along routine lines. Prices are steady. Domestic talc is quoted at from $16 to $18 per ton, at eastern mines; while imported talc is selling at from $23 to $30 per tons, on dock.

Market Quotations

Paper

(F. o. b. Mill)

Ledgers	6.50	@	—
Bonds	6.00	@	—
Index	6.00	@	—
Writings—			
Extra Superfine	6.50	@	—
Superfine	6.25	@	—
Tub sized	5.75	@	—
Engine sized	5.50	@	—
Book, Cased—			
S. & S. C.	5.35	@	5.75
S. & S. C. Litho.	5.60	@	6.00
M. F.	5.10	@	5.50
Coated and Enamel	5.90	@	6.55
Coated Litho	5.90	@	6.55
Tissues—Per Ream—			
White No. 1	.82½	@	.85
White No. 2	.67½	@	—
Anti-Tarnish M. G. only	1.00	@	—
Colored	.85	@	—
Kraft	.70	@	—
Manila	.67½	@	.70
Manila—			
No. 1 Jute	9.00	@	9.25
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.00	@	5.25
No. 2 Wood	3.50	@	4.00
Butchers	4.00	@	4.50
Fibre Papers—			
No. 1 Fibre	4.25	@	5.50
No. 2 Fibre	4.00	@	4.75
Common Bogus	1.50	@	3.00
Screenings	2.50	@	3.50
Glassine—			
Bleached	.11	@	—
Unbleached	.09	@	—

(The following Quotations are Delivered New York)

News, per ton—			
Roll, contract	40.00	@	—
Rolls, spot	40.00	@	—
Sheets	45.00	@	—
Kraft—			
No. 1 Northern	4.12½	@	4.75
Standard	4.00	@	—
Southern	3.87½	@	—
Boards—per ton—			
News	39.00	@	41.50
Chip	37.50	@	40.00
Sgl. Mla. Lt. Chip	42.50	@	45.00
Jute Lined Chip	42.50	@	45.00
Kraft Liners	52.50	@	—
White Patent Coated	55.00	@	57.50
Binders Boards	67.00	@	75.00

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	21.00	@	22.00
Dry	21.00	@	22.00

(F. o. b. Mill)

No. 1 Domestic and Canadian	18.00	@	24.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Division 1	2.60	@	—*
Division 2	2.55	@	—*
Division 3	2.50	@	—*
Prime Qualities—			
Class 1. All Prime Easy Bleaching	2.05	@	—*
Other Than Easy Bleaching—			
Class 2. Higher than Standard	2.00	@	—*
Class 3, Standard	1.95	@	—*
Class 4, Lower than Standard	1.90	@	—*

(On Dock, Atlantic Ports)

Kraft No. 1	1.80	@	1.85
Kraft No. 2	1.65	@	1.75

(F. o. b. Pulp Mill)

Kraft Domestic	1.80	@	1.85

(Delivered)

Soda Bleached	2.50	@	—

* Add 60 Cents per short ton, dock charges, for Albany; $2.00 for Lake Ports East and $3.00 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	6.50	@	6.75
Silesias No. 1	4.50	@	4.75
New Unbleached	7.00	@	7.25
New Soft Blacks	3.00	@	3.25
Blue Overall	4.75	@	5.00
Fancy	2.50	@	2.75
Washables	1.90	@	2.15
Mixed Khaki Cuttings	3.00	@	3.25
O. D. Khaki Cuttings	3.75	@	4.00
Men's Corduroy	1.75	@	1.85
New Mixed Blacks	2.50	@	2.75

Old Rags

White, No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	2.75	@	3.25
White, No. 2—			
Repacked	1.75	@	2.25
Miscellaneous	1.50	@	1.75
Thirds and Blues—			
Repacked	1.75	@	1.85
Miscellaneous	1.45	@	1.55
Roofing Rags—			
No. 1	1.55	@	1.60
No. 2	1.35	@	1.40
No. 3	1.00	@	1.05
No. 4	.95	@	1.00
No. 5A	.90	@	1.00

Foreign Rags

New Rags

New Dark Cuttings	2.00	@	2.25
New Mixed Cuttings	1.80	@	1.90
New Light Silesias	3.75	@	4.00
Light Flannelettes	4.00	@	4.25
Unbleached Cuttings	Nominal		
New White Cuttings	6.50	@	6.75
New Light Oxfords	3.25	@	3.50
New Light Prints	2.75	@	3.00

Old Rags

No. 1 White Linens	7.50	@	8.00
No. 2 White Linens	6.50	@	7.00
No. 3 White Linens	4.50	@	5.00
No. 4 White Linens	2.25	@	2.50
No. 1 White Cotton	4.25	@	4.75
No. 2 White Cotton	3.25	@	3.75
No. 3 White Cotton	2.50	@	2.75
No. 4 White Cotton	1.90	@	2.15
Extra Light Prints	2.00	@	2.25
Ord. Light Prints	1.75	@	1.85
Med. Light Prints	1.55	@	1.65
Dutch Blue Cottons	2.00	@	2.25
French Blue Linens	2.30	@	2.40
German Blue Linens	2.15	@	2.25
German Blue Cottons	1.70	@	1.80
Checks and Blues	1.70	@	1.80
Linsey Garments	1.95	@	2.05
Dark Cottons	1.50	@	1.60
Old Shopperies	1.00	@	1.05
New Shopperies	1.25	@	1.35
French Blues	2.00	@	2.25

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—			
Foreign	1.90	@	2.00
Domestic	1.75	@	1.85
Wool Tares, light	1.70	@	1.75
Wool Tares, heavy	1.90	@	2.00
Bright Bagging	1.75	@	1.80
Manila Rope—			
Foreign	1.85	@	2.00
Domestic	1.75	@	2.00
Mixed Strings	.85	@	1.00
New Burlap Cut	2.00	@	2.25
Hessian Jute Threads—			
Foreign	2.60	@	2.75
Domestic	2.80	@	3.00

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	2.45	@	2.55
Ordinary Hard White No. 1	2.10	@	2.15
Hard White No. 2	1.90	@	2.00
Soft White No. 1	1.75	@	1.85
Flat Stock—			
Stitchless	.65	@	.75
Over issue Mag	.65	@	.75
Solid Flat Book	.55	@	.60
Crumpled No. 1	.35	@	.40
Solid Book Ledger	1.50	@	1.65
Ledger Stock	.85	@	.90
New B. B. Chips	.30	@	.35
Manilas—			
New Env. Cut	1.70	@	1.80
New Cuttings	1.35	@	1.45
Print	Nominal		
Bogus Wrapper	.40	@	.50
Container	Nominal		
Old Kraft Machine—			
Compressed bales	1.10	@	1.20
News—			
No. 1 White News	1.45	@	1.50
Strictly Overissue	.50	@	.55
Strictly Folded	.32½	@	.35
No. 1 Mixed Paper	.25	@	.27½

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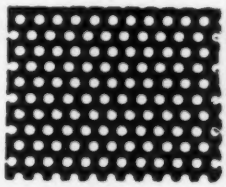

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(F. o. b. Mill)

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Coarse Polished—			
India	.12¼	@	.15½
Belg. White Hemp	.13¾	@	.14½
India Compress	.13¼	@	.13¾
Fine Polished—			
Fine India	.21	@	.23
Special	.19	@	.21
Unpolished—			
Box	.11½	@	.12
Paper Makers	.09	@	.13½
Tube Rope	.09½	@	.14½
Wall Paper	.10½	@	.14
Wrapping	.14½	@	.20½
Special	.14½	@	.15
Soft Fiber Rope	.11¾	@	.12¾

(Hard Fibre)

Bond	.11	@	.19½
Anchor	.10½	@	.12

CHICAGO

Paper

(F. o. b. Mill)

Rag Bond	.12	@	.50
Water Marked Sulphite Bond	.06¾	@	.11
Sulphite Bond	.05½	@	.11
Superfine Writing	.18	@	.24
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05¼	@	.06¼
No. 1 S.&S.C. Book	.06¾	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07	@	.12
Coated Label	.07	@	.08½
No. 1 Manila	.04½	@	.05¼
No. 1 Fibre	.04¾	@	.05¼
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.03¼	@	.03¾
No. 1 Kraft	4.75	@	5.00
Southern Kraft	3.88	@	4.25
No. 2 Kraft	3.88	@	4.25
Wood Tag Boards	.04¼	@	.06¼
Sulphite Screenings	.03	@	.03¼
Manila Tissue	.05¾	@	.07
White Tissue	.07	@	.09

(Delivered Central Territory)

News, per ton—			
Rolls, contract	41.00	@	—
Sheets, open	46.00	@	48.50
Boards, per ton—			
Plain Chip	46.50	@	—
Solid News	50.00	@	—
Manila Lined Chip	55.00	@	—
Patent Coated	65.00	@	—
Container Lined—			
85 Test, per 1000 sq. ft.			1.70
100 Test, per 1000 sq. ft.			1.85

Old Papers

(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope Cuttings	1.70	@	2.00
No. 1 Hard White	1.40	@	1.65
No. 1 Soft White	1.25	@	1.50
Ledger & Writings	.70	@	.80
Solid Books	.60	@	.70
Blanks	1.00	@	1.05
Krafts	.80	@	.90
New Kraft Cuts	1.20	@	1.30
Manila Env. Cuts	1.25	@	1.30
Ex. No. 1 Manila	.90	@	1.00
Print Manila	.40	@	.50
Overissue News	.40	@	.45
Old Newspapers—			
No. 1	.30	@	.35
No. 1 Mixed Paper	.25	@	.30
Roofing Stocks—			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper

(Delivered Philadelphia)

Bonds	.05-9/10	@	.38
Ledgers	.06-9/10	@	.40
Writings—			
Fine No. 3	.05	@	.06
Superfine	.10	@	.12
Extra Fine	.15	@	.26
Fine	.15	@	.26
Fine, No. 2	.10	@	.25
Book, M. F.	.05¼	@	.06¼
Book, S. S. & C.	.05½	@	.07½
Book, Coated	.06½	@	.09
Coated Lithograph	.06¾	@	.08½
Label	.07	@	.11
No. 1 Jute Manila	6.25	@	—
Manila Sul., No. 1	5.25	@	—
Manila No. 2	3.75	@	—
No. 1 Kraft	5.00	@	—
Southern Kraft	4.75	@	—
Common Bogus	.03	@	—
News Print Rolls	40.00	@	—
Straw Board	40.00	@	45.00
News Board	40.00	@	—
Chip Board	37.50	@	—
Wood Pulp Board	70.00	@	85.00
Binder Boards—			
No. 1, per ton	75.00	@	80.00
No. 2, per ton	70.00	@	75.00
Carload lots	65.00	@	70.00
Tarred Felts—			
Regular	52.25	@	54.25
Slaters (per roll)	.84	@	.94
Best Tarred, 1-ply (per roll)	1.95	@	2.10
Best Tarred, 2-ply (per roll)	1.40	@	1.75
Best Tarred, 3 ply	2.00	@	2.25

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.06¼	@	—
New White, No. 2	.04½	@	—
Light Silesias	.04	@	—
Silesias, No. 1	.04	@	—
Black Silesias, soft	.03	@	—
New Unbleached	.06	@	—
Washable, No. 1	.01¾	@	—
Blue Overall	.04	@	—
Cottons—According to grades—			
Washable, No. 2	.02½	@	.04½
New Blue	.01½	@	—
Fancy	.01½	@	—
New Black Soft	.02	@	.03¼
New Light Seconds	.04	@	—
New Dark Seconds	1.10	@	—
Khaki Cuttings—			
No. 1 O. D.	.03	@	.04
No. 2 Mixed	.03	@	.04
Corduroy	.01¾	@	—
New Canvas	.03½	@	.04½
New Black Mixed	.02¼	@	.02½

Domestic Rags (Old)

White No. 1—			
Repacked	3.25	@	3.50
Miscellaneous	2.00	@	3.00
Thirds and Blues—			
Miscellaneous	1.50	@	1.75
Repacked	2.25	@	2.50
Black Stockings (Export)	4.00	@	4.50
Roofing Stock—			
Foreign No. 1	.90	@	1.10
Repacked	1.30	@	1.50

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.50	@	—
Domestic	1.75	@	2.00
Manila Rope	2.50	@	—
Sisal Rope	.75	@	1.00
Mixed Rope	1.00	@	1.10
Scrap Burlaps—			
No. 1	1.75	@	1.80
No. 2	.80	@	.90
Wool Tares, heavy	2.75	@	—
Mixed Strings	1.00	@	1.10
No. 1 New Light Burlap	2.25	@	2.50
New Burlap Cuttings	2.00	@	2.25

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	2.25	@	2.30
No. 2 Hard White	1.90	@	2.00
No. 1 Soft White	1.80	@	1.85
No. 2 Soft White	1.25	@	1.30
No. 1 Mixed	—	@	.75
Solid Ledger Stock	1.50	@	1.60
Writing Paper	1.00	@	1.10
No. 1 Books, heavy	.55	@	.60
No. 1 New Manila	1.50	@	—
Print Manila	.50	@	.60
Container Manila	—	@	.50
Old Kraft	1.00	@	—
No. 1 Mixed Paper	—	@	.30
Straw Board Chip	.40	@	—
Binders Board Chip	.40	@	—
Corrugated Board	.55	@	—
Overissue News	.60	@	—
Old Newspapers	.40	@	—

BOSTON

Paper

(F. o. b. Mill)

Ledgers—			
Sulphite	.06	@	.12½
Rag Content	.12	@	.30
All Rag	.36	@	.52½
Bonds—			
Sulphite	.07¼	@	.11
Rag Content	.12	@	.30
All Rag	.36	@	.65
Writings	.06½	@	.20
Superfines	.11	@	.31
Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¼	@	.06¼
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	.04¾	@	.05
No. 2 Kraft	.04¼	@	.04¾
(F. o. b. Boston)			
Southern Kraft	.03¾	@	.04½
(F. o. b. destination in carload lots, f. o. b. mill in less than carload lots)			
Common Bogus	.02	@	.02¾
(Delivered New England points)			
News Print Rolls	39.50	@	—
Straw Board, rolls	.009	—	@35.00
Straw Board in Sheets, basis 35s to 70s	—	@40.00	
Filled News Board	40.00	@45.00	
Chip Board	37.50	@40.00	
Chip Board (Creasing)	37.50	@40.00	
Single Manila Lined Chip	47.50	@52.50	
Single White, Patent Coated News Board (Bender)	55.00	@65.00	
Wood Pulp Board	70.00	@75.00	
Binder Boards (Standard Grade)	67.00	@75.00	

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.00	@	2.20
No. 1 Soft White	1.75	@	1.90
No. 2 Mixed	.75	@	.80
Solid Ledger Books	1.40	@	1.50
Overissue Ledger Stock	1.15	@	1.30
Mixed Ledgers	.85	@	.90
No. 1 Books, heavy	.55	@	.65
No. 1 Books, light	.50	@	.60
Crumpled Stitchless Book Stock	.50	@	.60
Manila Env. Cuttings	1.30	@	1.40
No. 1 Old Manila	.60	@	.65
White Blank News	1.25	@	1.30
No. 1 Kraft	1.10	@	—
Mixed Papers	.22½	@	.25
Print Manila	.50	@	.60
Container Manilas	.27½	@	—
Old Newspapers	.25	@	.27½
Overissue News	—	@	.35
Box Board Chips	—	@	.25
Corrugated Boxes	.35	@	.37½
Kraft corrugated boxes	.85	@	—
Screening Wrappers	.40	@	.45

Bagging

(F. o. b. Boston)

Manila Rope—			
Foreign	2.10	@	—
Domestic	2.10	@	2.25
Transmission Rope	.90	@	1.00
Jute Rope	1.60	@	1.75
Jute Carpet Threads	.65	@	.70
Gunny No. 1—			
Foreign	1.90	@	—
Domestic	1.75	@	1.80
Bleachery Burlap	4.00	@	4.50
Scrap Burlap—			
Foreign	1.85	@	1.90
Domestic	1.60	@	1.75
Scrap Sisal	1.40	@	1.50
Scrap Sisal for Shredding	1.60	@	1.65
Wool Tares, heavy	1.90	@	2.00
New Burlap Cuttings	1.75	@	1.90
Australian Wool Pouches	2.50	@	2.75
Heavy Baling Bagging	2.00	@	2.25
Paper Mill Bagging	1.25	@	—
Bagging No. 2	.90	@	.95

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.01¾	@	.02
New White No. 1	.06	@	.06¼
New White No. 2	.04	@	.04¼
Silesias No. 1	.04½	@	—
New Black Silesias	.02½	@	.03
Soft Unbleached	.06½	@	.06¾
Blue Cheviot	—	@	4.65
Fancy	.0225	@	.023
Washable	.0165	@	.017
Cottons—According to grades—			
Blue Overalls	.04¾	@	.05
New Black, soft	.04	@	.04¾
Khaki Cuttings	.03½	@	.03¾
O. D. Khaki	.03¼	@	.04
Corduroy	.01¾	@	.02
New Canvas	—	@	.05
B.V.D. Cuttings	—	@	.06¼
Paper Mill Bagging	1.10	@	1.25

Domestic Rags (Old)

(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	—	@	2.75
Miscellaneous	2.50	@	2.75
White No. 2—			
Repacked	1.90	@	2.00
Miscellaneous	2.00	@	2.25
Twos and Blues	1.50	@	2.00
Thirds and Blues—			
Repacked	1.37½	@	1.75
Miscellaneous	1.25	@	1.62½
Black Stockings	2.50	@	3.00
Roofing Stock—			
No. 1	1.50	@	1.60
No. 2	1.35	@	1.40
No. 3	1.05	@	1.15

Foreign Rags

(F. o. b. Boston)

Dark Cottons	1.55	@	1.70
New White Shirt Cuttings	5.50	@	6.00
Dutch Blues	2.25	@	2.50
New Checks & Blues	2.50	@	3.00
Old Fustians	1.90	@	—
Old Linsey Garments	2.10	@	—
New Silesias	4.50	@	4.75

TORONTO

Paper

(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.11	@	—
No. 2 Sulphite	.08½	@	—
No. 1 Colored	.12	@	—
No. 2 Colored	.09	@	—
Ledgers (sulphite)—			
Ledgers, No. 1	.34½	@	—
Ledgers, No. 2	.25½	@	—
Writing	.09	@	.09½
Book—			
No. 1 M. F. (Carloads)	6.50	@	—
No. 2 M. F. (Carloads)	6.00	@	—
No. 3 M. F. (Carloads)	5.50	@	—
No. 1 S. C. (Carloads)	7.00	@	—
No. 2 S. C. (Carloads)	6.50	@	—
No. 3 S. C. (Carloads)	5.20	@	—
No. 1 Coated and Litho	12.00	@	—
No. 2 Coated and Litho	10.50	@	—
No. 3 Coated and Litho	9.50	@	—
Coated tinted	13.00	@	—
Wrapping—delivered—			
Rag Brown	4.75	@	—
White Wrap	3.50	@	—
"B" Manila	5.25	@	—
No. 1 Manila	5.40	@	—
Fiber	5.40	@	—
Kraft, M. F.	5.90	@	—
Kraft, No. 2	5.40	@	—

(F. o. b. Cars Toronto)

News, per ton—			
Rolls (contract)	39.50	@	—
Sheets	44.50	@	—

Pulp

Ground wood	27.00	@	—
Unbleached Sulphite	42.00	@	—
Book (Class 1)	58.00	@	—
Writing (Class 2)	59.00	@	—
Select (Class 3)	60.00	@	—

Old Waste Paper

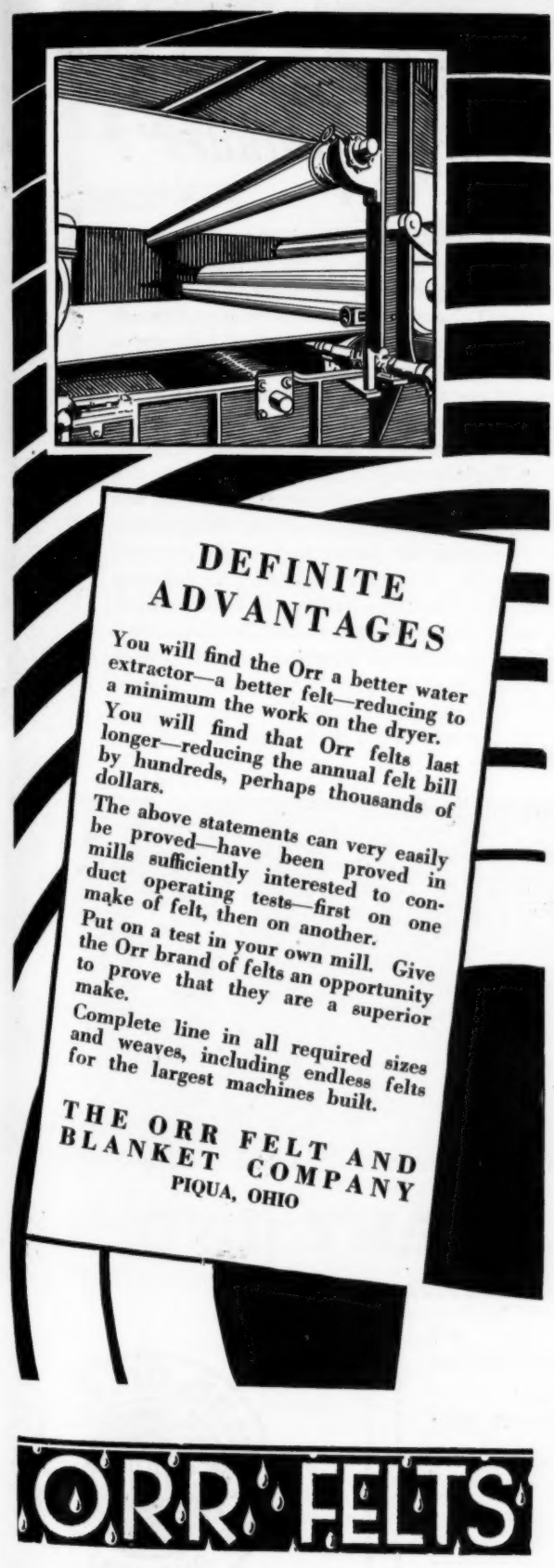
(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	2.00	@	2.30
Soft White	1.60	@	1.90
White Blk. News	1.25	@	1.40
Book and Ledger—			
Flat Magazine and Book Stock (old)	.90	@	1.00
Light and Crumpled Book Stock	.80	@	.90
Ledgers and Writings	1.00	@	1.05
Manilas—			
New Manila Cut	1.25	@	1.40
Printed Manilas	.50	@	.60
Kraft	1.00	@	1.60
News and Scrap—			
Strictly Overissue	.60	@	—
Strictly Folded	.50	@	—
No. 1 Mixed Paper	.40	@	—

Domestic Rags

(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.06	@	—
Fancy Shirt Cuttings	.02	@	—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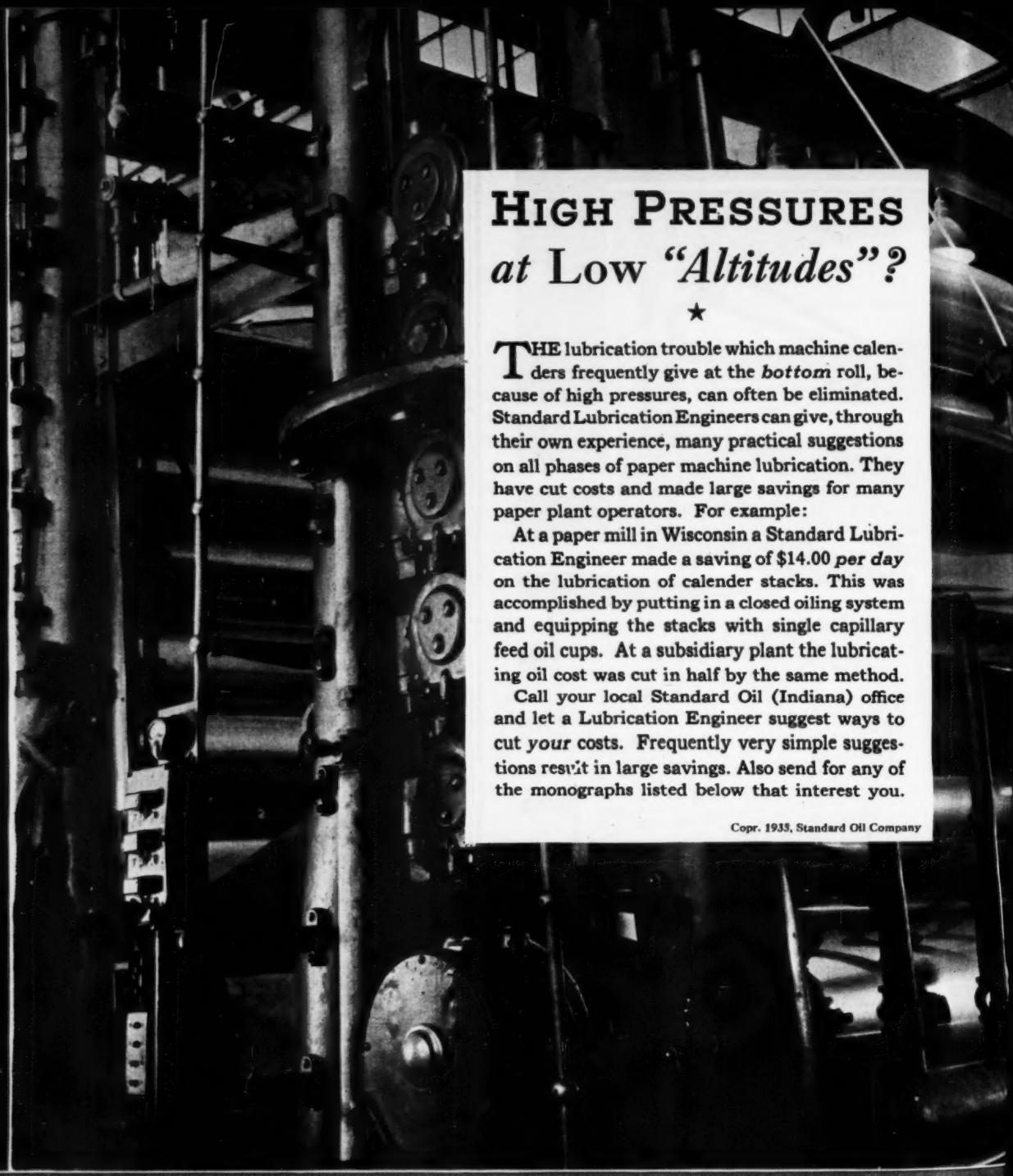

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